
2013 California Exports of Recyclable Materials



California Department of Resources Recycling and Recovery

August 2014

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STATE OF CALIFORNIA

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Executive Summary

This report contains information about the types of recyclables exported from California's ports, the amount shipped, and their value. The paper focuses on seaborne exports of recyclables because the data available is more reliable and detailed than for other types of exports. As additional sources of information are found, future updates of this paper may include data on recyclables exported by truck and rail as well.

For convenience, this report combines recyclables into several groups. These include High-Grade Paper, Mixed Paper, Plastics 1, 2, and 4, Other Plastics, Glass, Tire and Rubber Scrap, Used Oil and Grease, Batteries, Copper Wire, Ferrous, and Non-Ferrous Metals. Information for Aluminum Cans is provided separately though the weight and value are also included in the data for Non-Ferrous Metals.

Overall, recyclables exported by sea made up one quarter (25 percent) of the total vessel weight of all commodities shipped from California ports in 2013. These recyclables accounted for approximately 7 percent of the total value of all exports shipped from California. China continues to be the largest market for recyclable materials, receiving more than half of the total weight shipped from California by sea.

Other key findings:

- Seaborne exports of all commodities shipped from California equaled 73.5 million tons, with a value of \$106 billion.
- Recyclable materials made up nearly 18.6 million of those tons, with a value of more than \$7.5 billion.
- More than half of the recyclable material exported from California was Mixed Paper, Cardboard, and Paperboard.
- Ferrous and Non-Ferrous Metals combined made up about 75 percent of the dollar value of all shipped recyclable materials.
- China, Taiwan, and Korea made up 87 percent by vessel weight and 84 percent by vessel value of the seaborne recyclable exports market from California.
- The amount of recyclables exported in 2013 was about 6 percent less than in 2012.
- Seaborne recyclables exported to China dropped about 5 percent in 2013 compared to 2012.
- Data received so far shows 2014 is lagging behind 2013 in recyclable export totals.
- 43 percent of the country's recyclable exports by weight passed through California's ports in 2013.
- By value, California accounted for 38 percent of the nation's recyclable exports total.

Introduction

AB 341 (Chapter 476, Statutes of 2011) established a statewide goal for California of 75 percent recycling, composting, or source reduction of solid waste by 2020. Recycling will be a key part of efforts to reach this goal, but measuring recycling in California is a challenge as there is currently no comprehensive means to do this. The examination of recyclable exports helps us gain a better understanding of where our recyclables go and of their relative importance, but this is only part of the story.

In 2013, California exported a total value of about \$168 billion in all commodities and all shipping methods, according to the U.S. Census Bureau,¹ with exports to Canada and Mexico making up more than 25 percent of that total value. This report, however, focuses mainly on seaborne exports (also known as vessel weight and value) of recyclables from California's ports to their respective destinations and does not include exports to Mexico or Canada by truck or rail. Efforts are currently in place to obtain and incorporate truck and rail export information and will be included in future reports if possible.

According to a 2013 CalRecycle report on job creation, exports of recyclable materials greatly affect recycling jobs that could have been created in California had the material been turned into new products here. Furthermore, in-state capacity to handle currently exported materials appears insufficient should export markets collapse.² With this in mind, it is important to know as much as possible about the export of recyclables to help plan for the future.

This paper looks to help answer the questions:

- How many tons of recyclable materials were exported by sea in 2013 through California ports?
- What types of recyclable materials were exported by sea in 2013 through California ports?
- What was the value and tonnage of these exported recyclable materials?
- Where did the exported materials go, and what are their historic export trends?

¹ "State Exports via California." *State Exports via California*. United States Census Bureau, n.d. Web. 14 Aug. 2014. <<http://www.census.gov/foreign-trade/statistics/state/data/ca.html>>.

² "Creating New Jobs through Increased Recycling, Processing and Remanufacturing." *Job Creation from Recycling* (2013): CalRecycle, 16 Apr. 2013. Web. <<http://www.calrecycle.ca.gov/Actions/Documents/85/20132013/838/Jobs%20through%20Recycling.pdf>>.

Methods

This report focuses on seaborne exports of recyclables from California's ports to their respective destinations. Rail, truck, and air tonnage, including exports to Canada and Mexico, are not included in the report because vessel shipment data is more reliable and more detailed. However, data on rail, truck, and air exports may be available for future reports. The report's data comes mainly from WISERTrade information unless otherwise noted. WISERTrade is a company that aggregates U.S. Census Bureau and other sources of information into its system.

Harmonized System (HS) codes are an international system of names and numbers assigned to traded commodities. HS codes were used within the WISERTrade database to identify recyclable waste commodities. For convenience, these commodities were combined into several custom groups in this report to represent categories of common recyclables by type or particular interest, such as Ferrous Metals and Mixed Paper. Throughout this report weight is shown in tons, and a conversion factor of .00110231 tons per kilogram was used to calculate the totals from WISERTrade database reports.

While it is not possible to determine definitively how much of the waste and scrap material exported from California actually originated in California, rough estimates for some selected material categories usually range from about 60 percent to about 80 percent by weight.

Please note that Granules, Iron or Steel was removed as a material type from this year's report as it does not represent a waste and scrap commodity. The impact of removing this material type is negligible, as these materials represented less than one-third of 1 percent of the Ferrous Metal vessel weight and vessel value totals from the 2012 report.

Results

2013 California Ports Recyclables Exports by Sea (Figures 1, 1a, 2, and 2a)

- Total seaborne weight of recyclables exported from California was approximately 18.6 million tons.
- Recyclables made up about 25 percent by weight of all California's seaborne exports.
- Total value of seaborne recyclables exports from California is \$7.5 billion.
- Recyclables made up about 7 percent by dollar value of all California's seaborne exports.
- The single largest category by weight was Mixed Paper, which accounted for 52 percent of recyclable exports.
- Non-Ferrous Metals, though only 8 percent of exports by weight, made up 41 percent of the recyclables value.
- Ferrous Metals made up 34 percent of the value, and combined with Non-Ferrous Metals accounted for 75 percent of the value of exported recyclables by sea.
- The most valuable recyclable commodity was Copper Wire at \$5,950 per ton.

Figure 1: 2013 Seaborne California Exports by Weight (Total = 73.5 Million Tons)

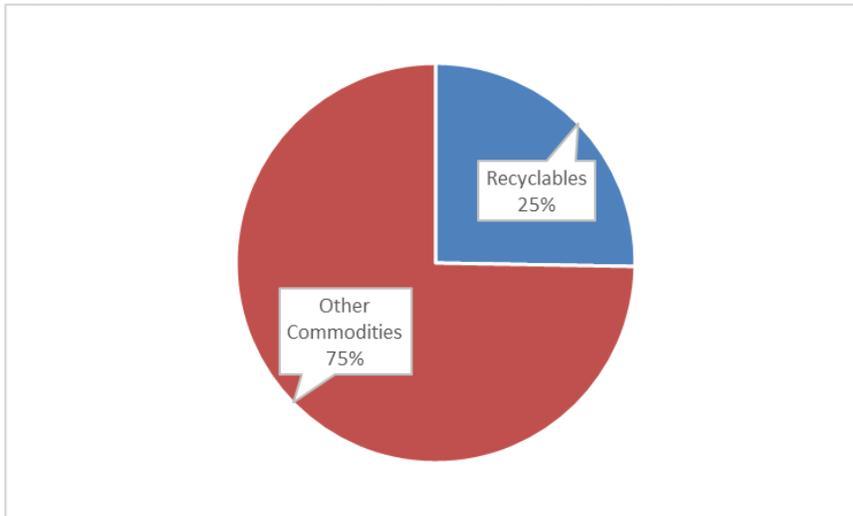


Figure 1a: 2013 Seaborne California Exports by Value (Total = \$106 Billion)

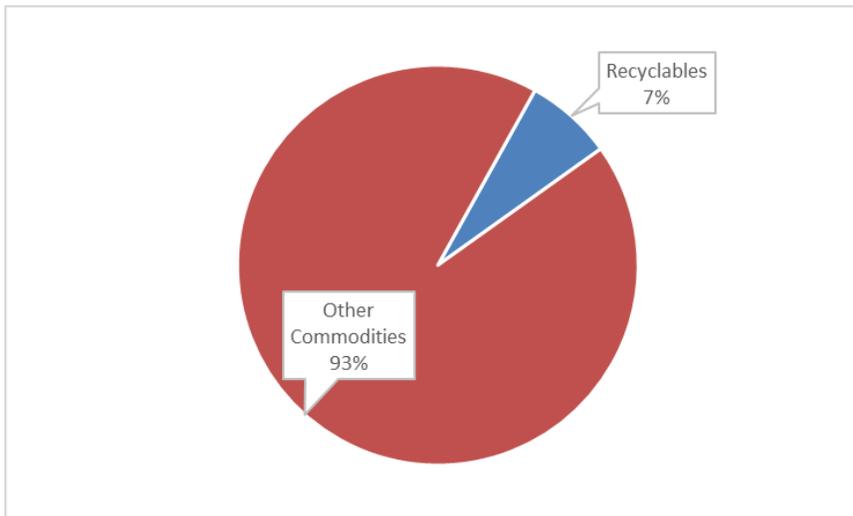


Figure 2: 2013 California Seaborne Exported Recyclables by Weight (Total Weight = 18.6 Million Tons)

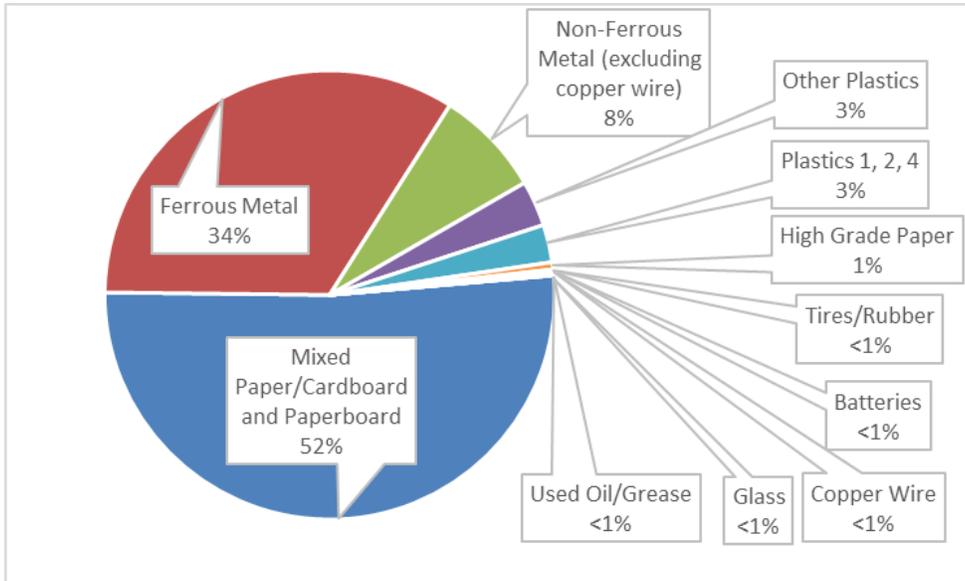
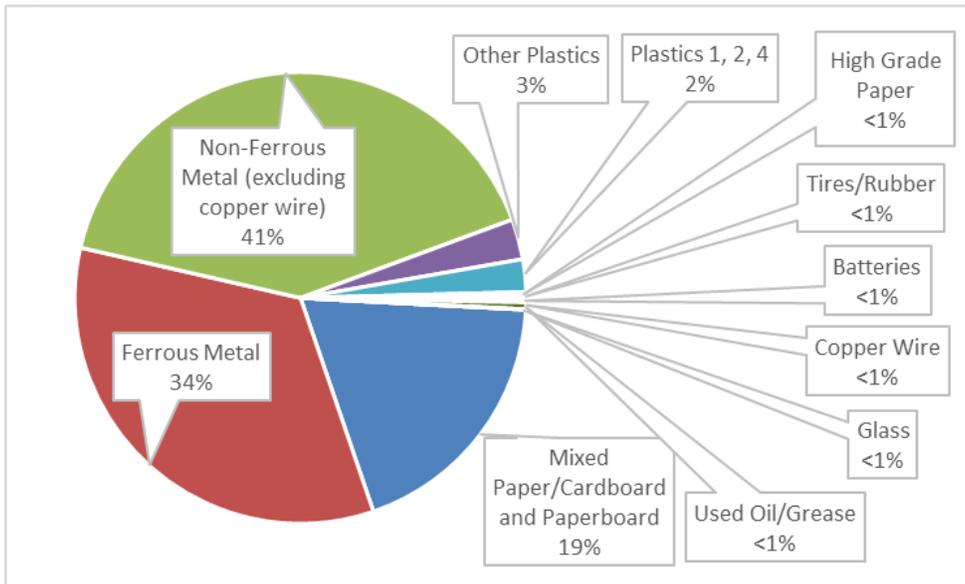


Figure 2a: 2013 California Seaborne Exported Recyclables by Value (Total Value = \$7.5 Billion)



Seaborne Exports of Recyclables by Destination Country (Figures 3, 3a, 3b, 3c)

From California Ports (Vessel Weight):

- Exported about 18.6 million tons of recyclables from California ports in 2013.
- The following three countries received 87% by vessel weight of those exports:
 - China – 59 percent (10.9 million tons)
 - Taiwan – 14 percent (2.6 million tons)
 - Korea – 14 percent (2.6 million tons)
- Compared to 2012, exports of recyclables were down about 6 percent by weight.
- China continues to be the largest importer of seaborne recyclables from California, but imported about 560,000 tons less in 2013 compared to 2012. This is a decrease of 4.8 percent, mostly as a result of a drop in Mixed Paper (down 450,000 tons).

Figure 3: Recyclable Exports by Sea from California to Countries in 2013 (Vessel Weight)³

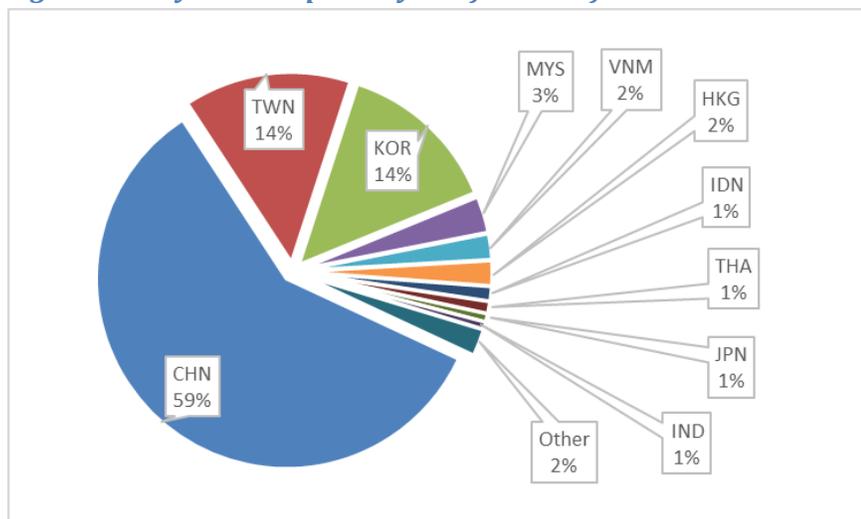
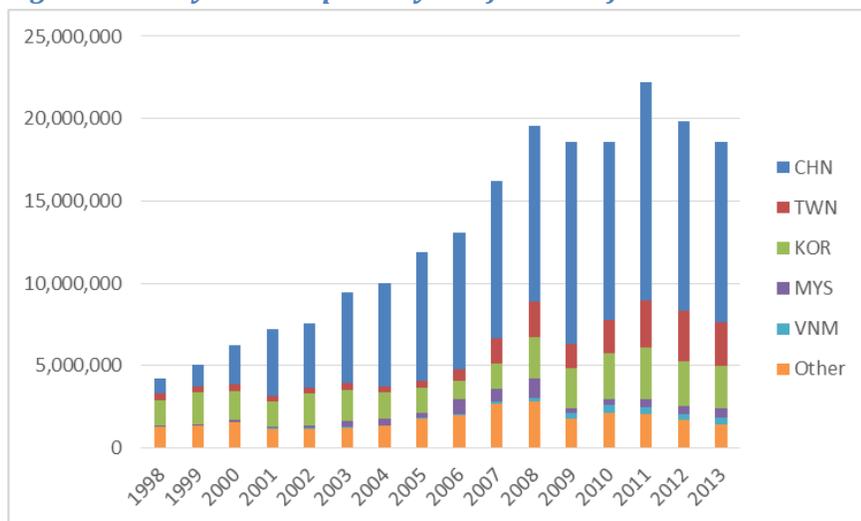


Figure 3a: Recyclable Exports by Sea from California to Countries (Tons)



³ See Appendix 7 for Country Acronyms.

From California Ports (Vessel Value):

- Exported about \$7.5 billion worth of recyclables from California ports in 2013.
- The following three countries received 84 percent by vessel value of those exports.
 - China – 58 percent (\$4.4 billion)
 - Taiwan – 14 percent (\$ 1 billion)
 - Korea – 14 percent (\$9.8 million)
- Compared to 2012, vessel value of recyclables exported from California ports was down about 8 percent.
- Scrap exports globally declined about 10 percent in 2013.⁴

Figure 3b: Recyclable Exports by Sea from California by Country in 2013 (Vessel Value)

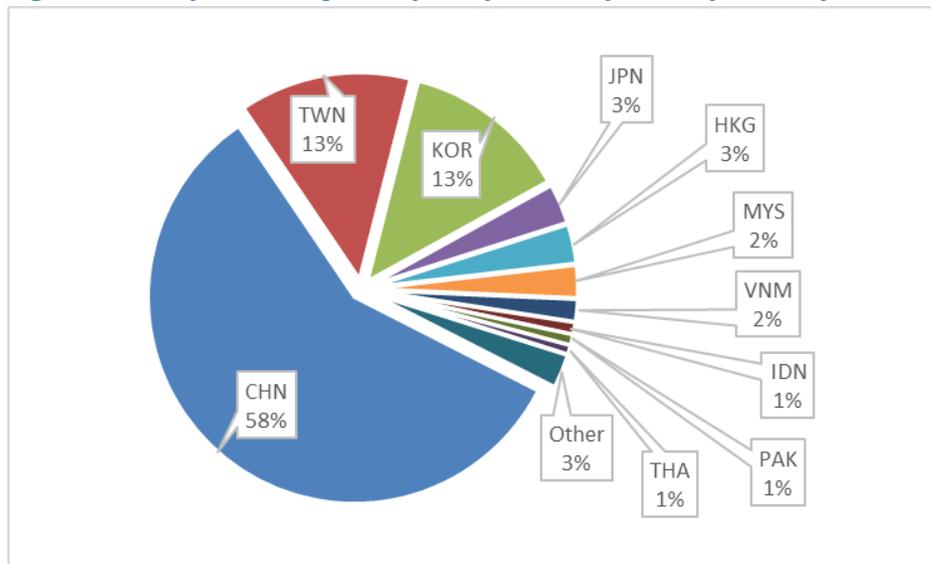
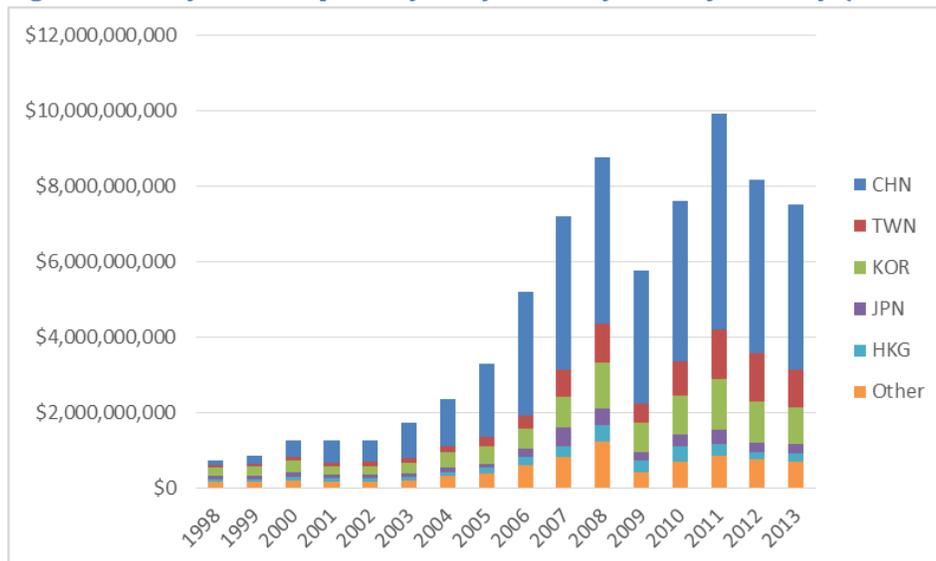


Figure 3c: Recyclable Exports by Sea from California by Country (Vessel Value)



⁴ Nelson, Christina. "Trading Up: High-Value US Exports to China Increase in 2013." *China Business Review*. China Business Review, 19 May 2014.

From All U.S. Ports (Vessel Weight):

- About 42.7 million tons of recyclables were exported from all U.S. ports in 2013.
- The top three destination countries made up 69 percent by vessel weight of those exports:
 - China – 47 percent (19.9 million tons)
 - Turkey – 13 percent (5.8 million tons)
 - Korea – 9 percent (4 million tons)
- Compared to 2012, exports of recyclables from all U.S. ports were down nearly 10 percent by weight.
- Similar to California, the United States as a whole exports more seaborne recyclables to China than any other country. However, non-Asian countries play a larger role in United States seaborne exports.

Figure 3d: Recyclable Exports by Sea from U.S. to Countries in 2013 (Vessel Weight)

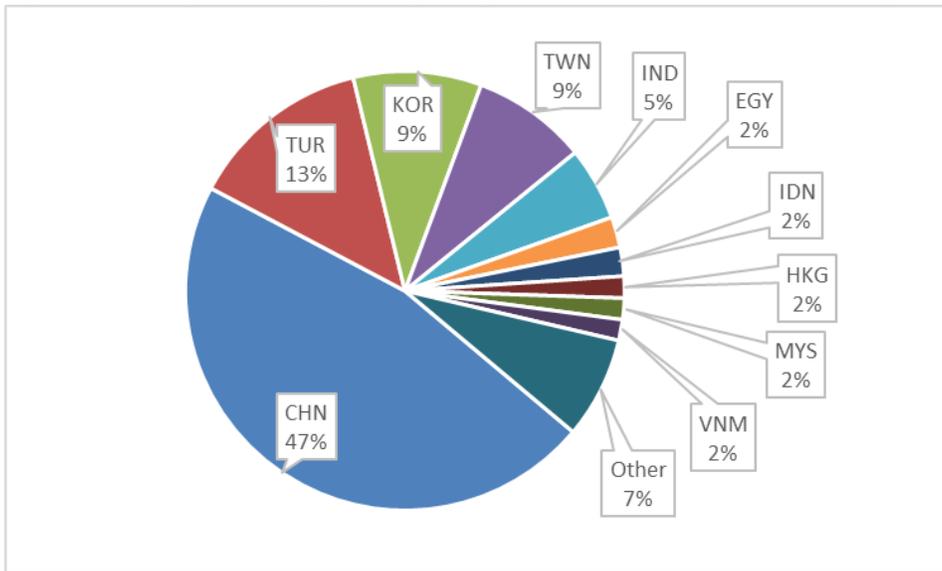
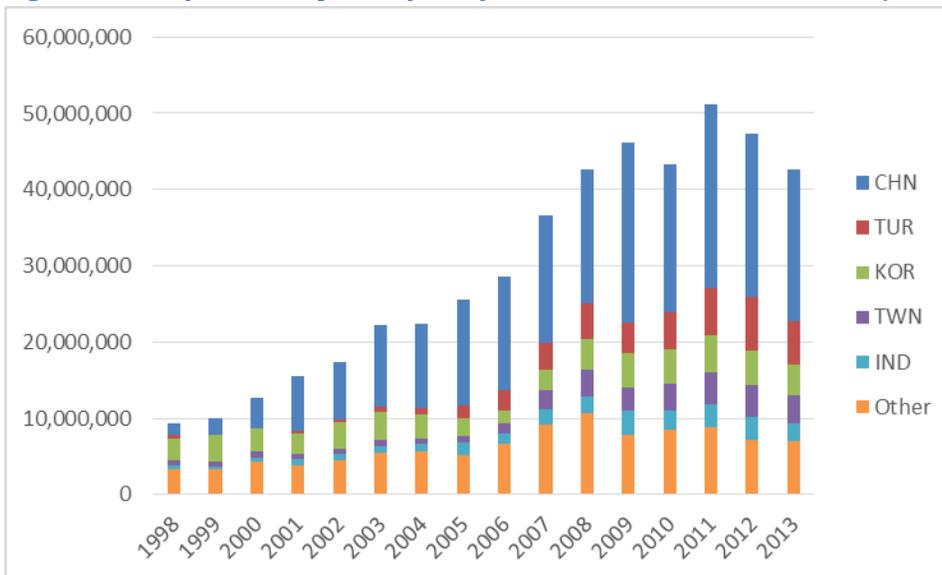


Figure 3e: Recyclable Exports by Sea from U.S. to Countries in 2013 (Tons)



From All U.S. Ports (Vessel Value):

- About \$19.6 billion of recyclables were exported from all U.S. ports in 2013.
- The top three destination countries made up 62 percent by vessel value of those exports:
 - China – 44 percent (\$ 8.7 billion)
 - Turkey – 10 percent (\$1.9 billion)
 - Korea – 8 percent (\$1.6 billion)
- Compared to 2012, vessel value of recyclables exported from all U.S. ports was down nearly 12 percent.
- Some European countries appear on the value pie chart below but not on the weight pie chart above. This is due to higher value of metals exported to those countries.

Figure 3f: Recyclable Exports by Sea from U.S. to Countries in 2013 (Vessel Value)

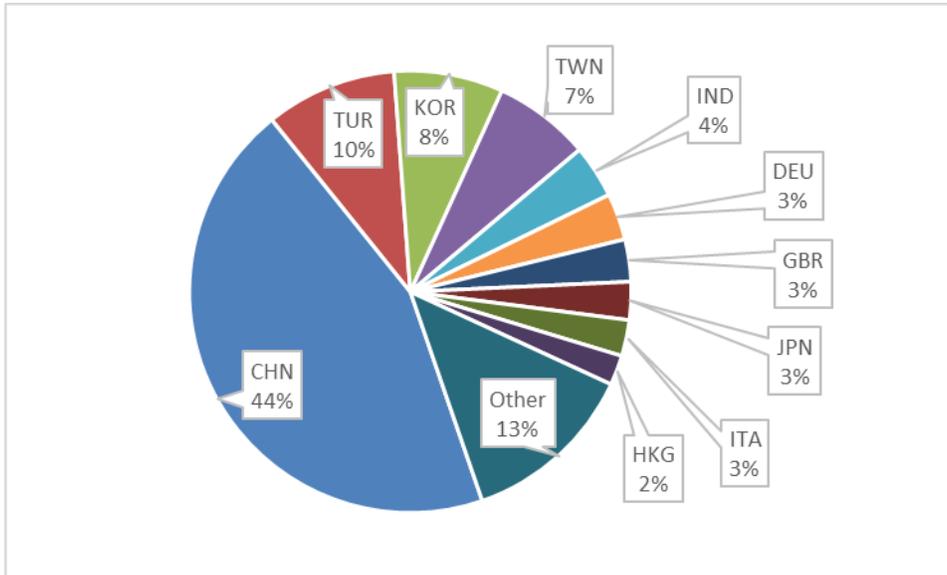
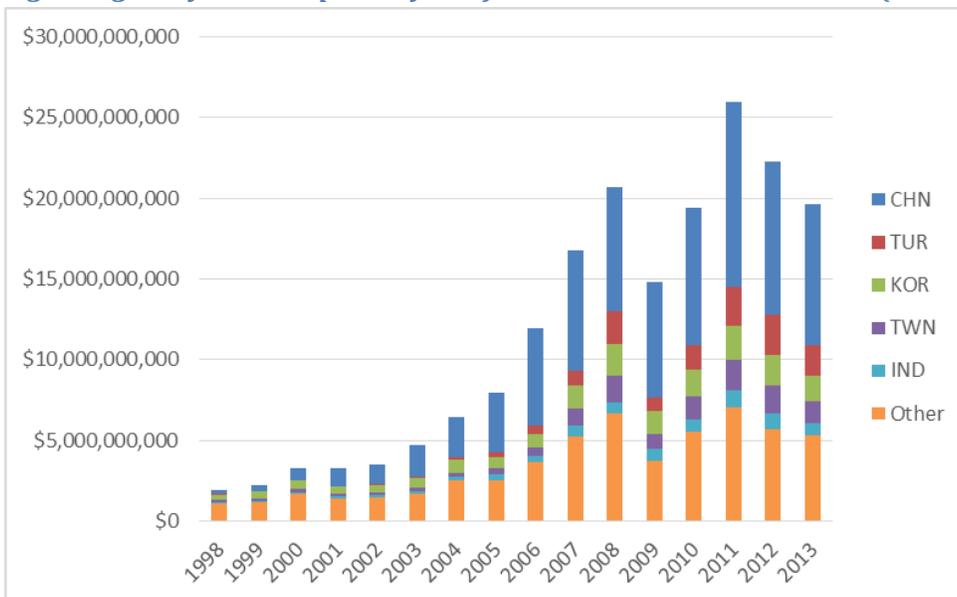


Figure 3g: Recyclable Exports by Sea from U.S. to Countries in 2013 (Vessel Value)



National Comparisons (Figures 4 and 4a)

- The United States exported approximately 42.7 million tons of recyclables by sea worth almost \$19.6 billion in 2013.
- Forty-three percent of the country’s recyclable exports by weight passed through California’s ports in 2013, slightly surpassing that of the entire U.S. east coast.
- By value, California accounted for 38 percent of the nation’s recyclable exports total, 9 percent less than the east coast at 47 percent.

Figure 4: U.S. Recyclable Exports in 2013 by Region (Weight)

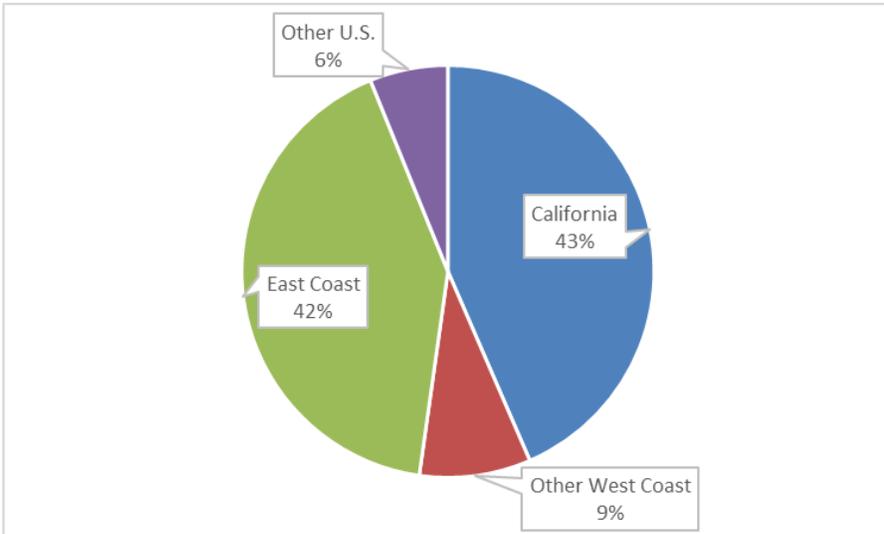
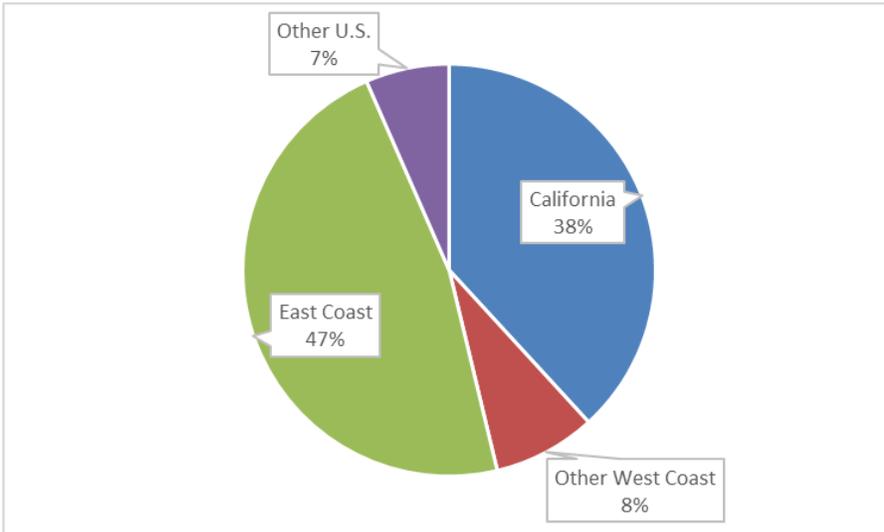


Figure 4a: U.S. Recyclable Exports in 2013 by Region (Value)



Individual Commodities

High-Grade Paper (Figures 5 and 5a)

- The total seaborne weight exported from California was nearly 97,000 tons. Compared to 2012, exports of High-Grade Paper were down 20 percent in 2013.
- High-Grade Paper made up 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was more than \$19 million.
- High-Grade Paper made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton has increased since 1998, although the 2013 price of \$201/ton was more than \$70/ton lower than the 2011 price.
- The following four countries received 68 percent of the seaborne High-Grade Paper exports from California:
 - Korea – 24,000 tons (25 percent)
 - China – 16,000 tons (16 percent)
 - El Salvador – 13,000 tons (14 percent)
 - Mexico – 13,000 tons (13 percent)

Figure 5: High-Grade Paper Exports from California by Country in 2013 (Weight)

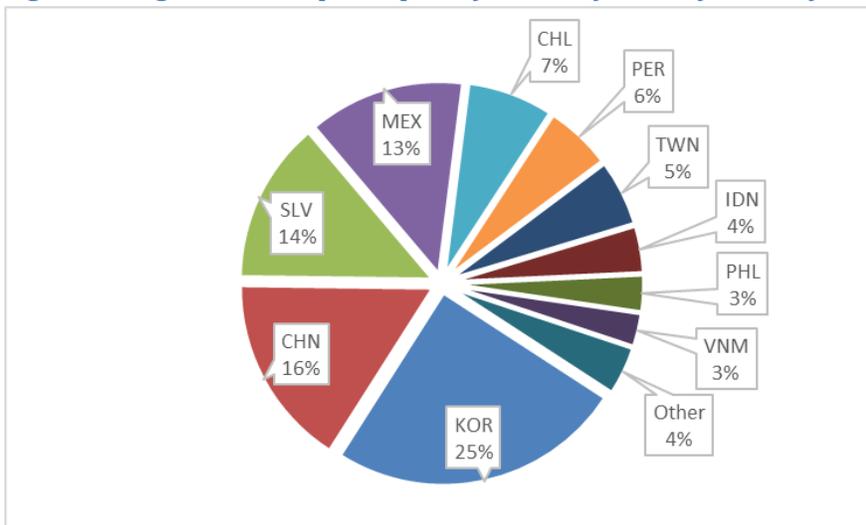
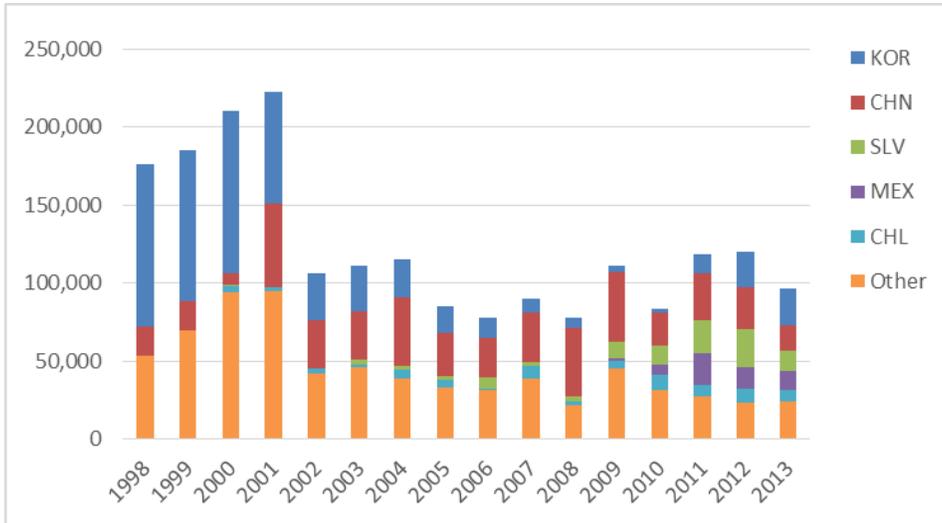


Figure 5a: High-Grade Paper Exports Trend from California by Country (Tons)



Mixed Paper, Cardboard, and Paperboard (Figures 6 and 6a)

- The total seaborne weight exported from California was almost 9.6 million tons. Compared to 2012, exports of Mixed Paper were down nearly 6 percent in 2013.
- Mixed Paper made up 52 percent of recyclable seaborne exports. This represents the largest category by weight.
- The vessel value of seaborne exports from California was more than \$1.4 billion.
- Mixed Paper made up about 19 percent of the value of recyclable seaborne exports.
- The price per ton has increased since 1998 and has been relatively stable for the past few years at around \$148/ton.
- The following two countries received 93 percent of the seaborne Mixed Paper, Cardboard, and Paperboard exports from California:
 - China – 8.2 million tons (86 percent)
 - Korea – 713,000 tons (7 percent)

Figure 6: Mixed Paper, Cardboard, and Paperboard Exports from California by Country in 2013 (Weight)

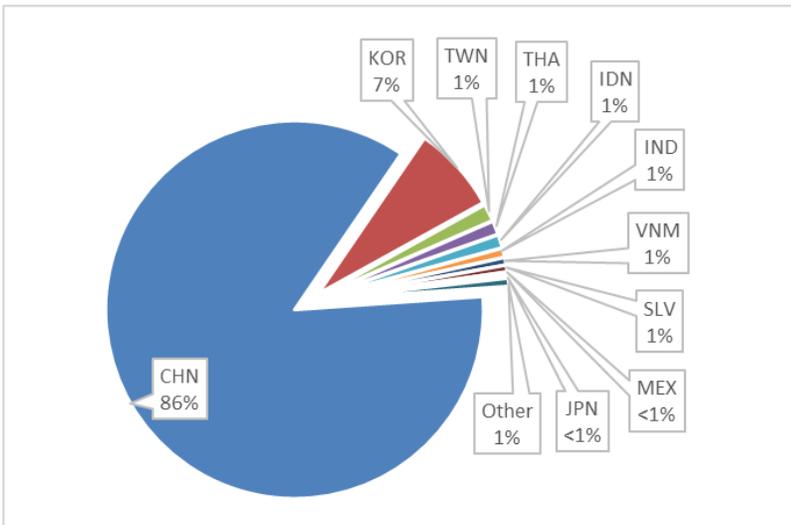
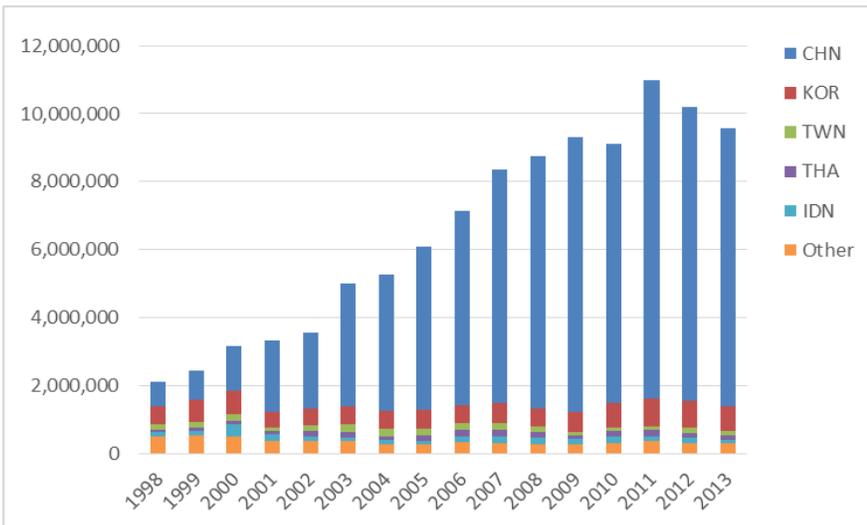


Figure 6a: Mixed Paper, Cardboard, and Paperboard Exports Trend from California by Country (Tons)



Plastics 1, 2, 4 (PET, HDPE, LDPE) (Figures 7 and 7a)

- The total seaborne weight exported from California was more than 500,000 tons. Compared to 2012, exports of Plastics 1, 2, and 4 were up 3 percent in 2013.
- Plastics 1, 2, and 4 made up 3 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was almost \$176 million.
- Plastics 1, 2, and 4 made up 2 percent of the value of recyclable seaborne exports.
- The price per ton has decreased since 1998, but the 2013 price of \$348/ton was about the same as it was in 2012.
- The following three countries received 91 percent of the seaborne Plastics 1, 2, and 4 exports from California:
 - China – 316,000 tons (63 percent)
 - Hong Kong – 119,000 tons (24 percent)
 - Malaysia – 22,000 tons (4 percent)

Figure 7: Plastics 1, 2, 4 Exports from California by Country in 2013 (Weight)

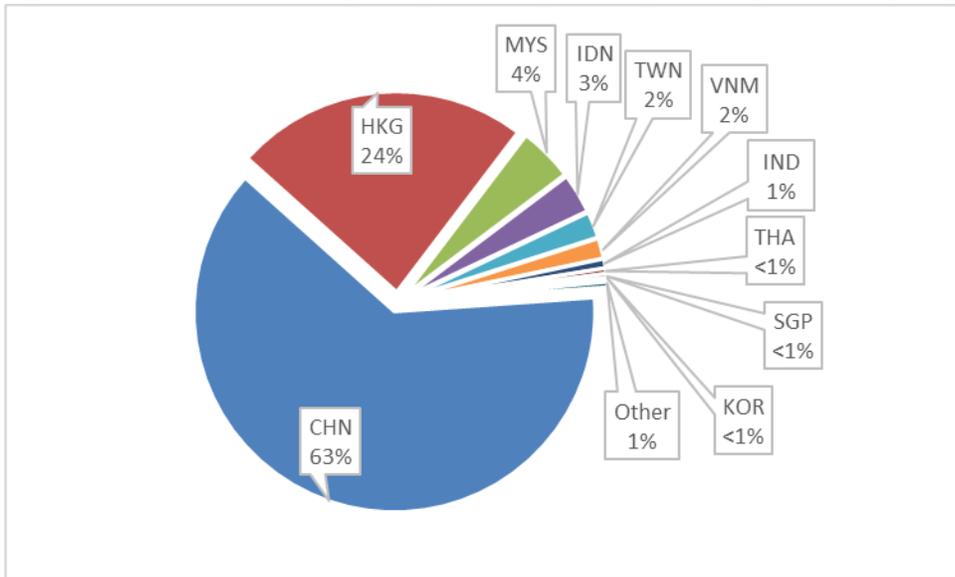
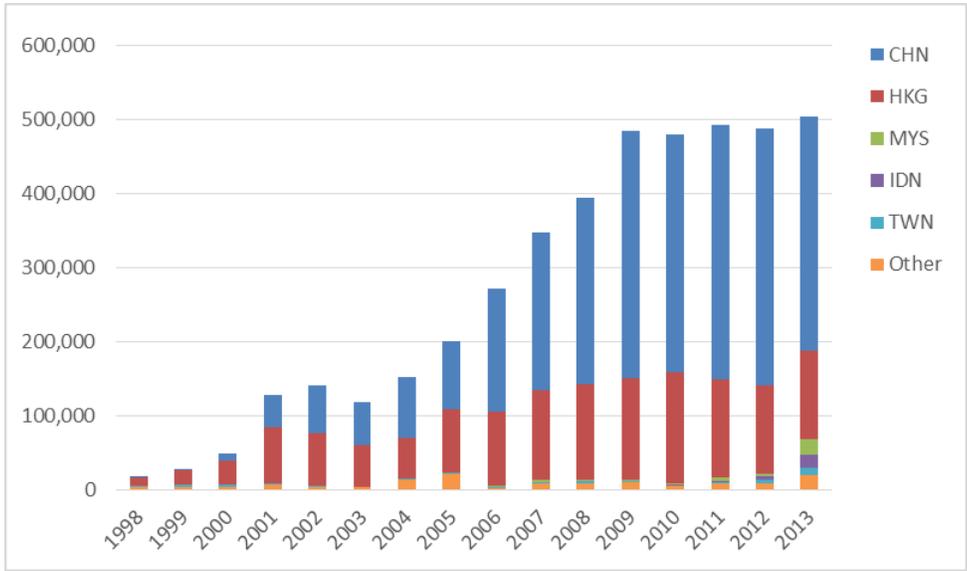


Figure 7a: Plastics 1, 2, 4 Exports Trend from California by Country (Tons)



Other Plastics 3, 5, 6, 7 (PVC, Polystyrene, Other) (Figures 8 and 8a)

- The total seaborne weight exported from California was more than 608,000 tons. Compared to 2012, exports of Other Plastics were down 8 percent in 2013.
- Other Plastics made up 3 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was more than \$216 million.
- Other Plastics made up 3 percent of the value of recyclable seaborne exports.
- The price per ton has been up and down since 1998, with 2013 showing a decline to \$356/ton.
- The following three countries received 94 percent of the seaborne Plastics 3, 5, 6, and 7 exports from California:
 - China – 378,000 tons (62 percent)
 - Hong Kong – 171,000 tons (28 percent)
 - Indonesia – 24,000 tons (4 percent)

Figure 8: Other Plastics Exports from California by Country in 2013 (Weight)

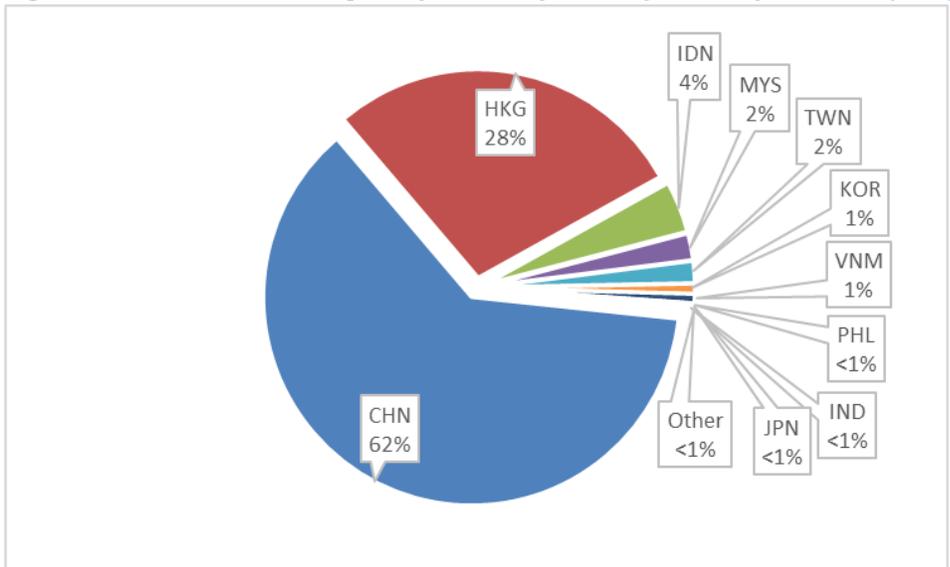
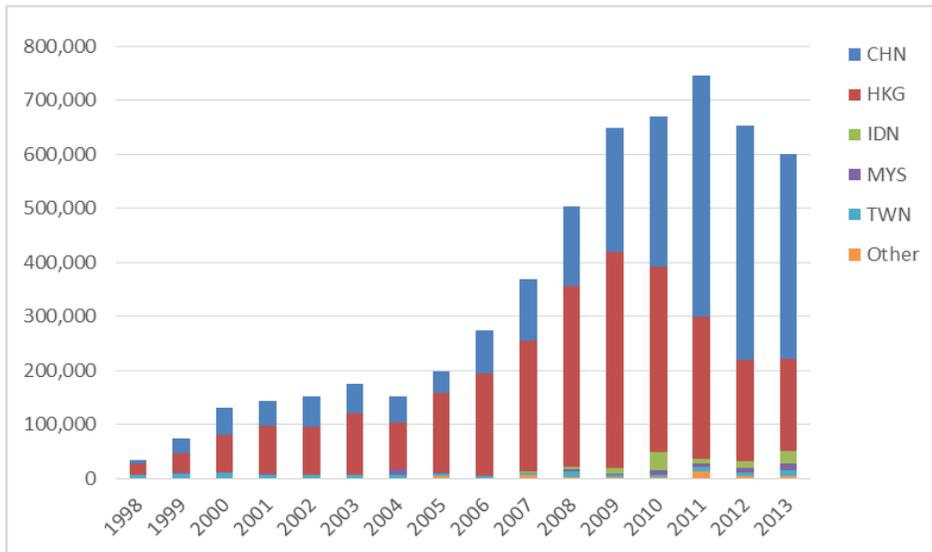


Figure 8a: Other Plastics Exports Trend from California by Country (Tons)



Glass (Figures 9 and 9a)

- The total seaborne weight exported from California was almost 3,300 tons. Compared to 2012, exports of Glass were down about 12 percent in 2013.
- Glass made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was almost \$1.7 million.
- Glass made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton was \$506 in 2013, up from \$277/ton in 2012.
- The following three countries received 93 percent of the seaborne Glass exports from California:
 - India – 2,700 tons (81 percent)
 - Japan – 282 tons (9 percent)
 - Taiwan – 104 tons (3 percent)

Figure 9: Glass Exports from California by Country in 2013 (Weight)

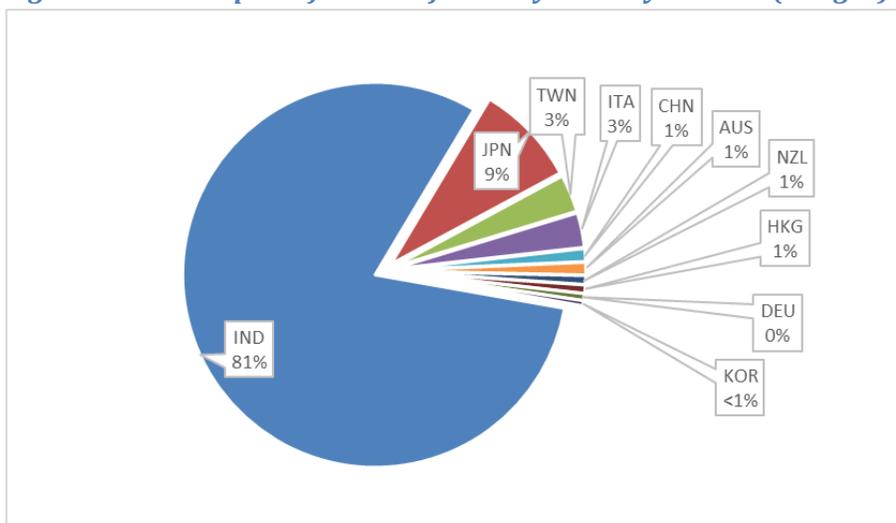
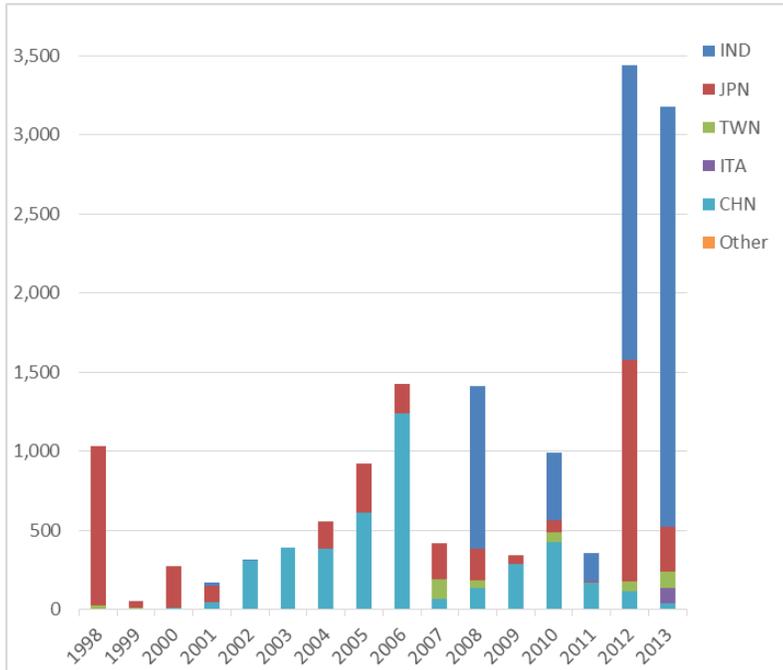


Figure 9a: Glass Exports Trend from California by Country (Tons)



Tires and Rubber Scrap (Figures 10 and 10a)

- The total seaborne weight exported from California was almost 52,000 tons. Compared to 2012, exports of Tires and Rubber Scrap were down 40 percent in 2013.
- Tires and Rubber Scrap made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was almost \$18.7 million.
- Tires and Rubber Scrap made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton trend is down since 1998. The 2013 price was up to \$359/ton compared to the 2012 low of \$268/ton.
- The following four countries received 86 percent of the seaborne Tires and Rubber Scrap exports from California:
 - Vietnam – 21,000 tons (40 percent)
 - Korea – 11,000 tons (22 percent)
 - Hong Kong – 7,000 tons (13 percent)
 - Japan – 6,000 tons (11 percent)

Figure 10: Tires/Rubber Scrap Exports from California by Country in 2013 (Weight)

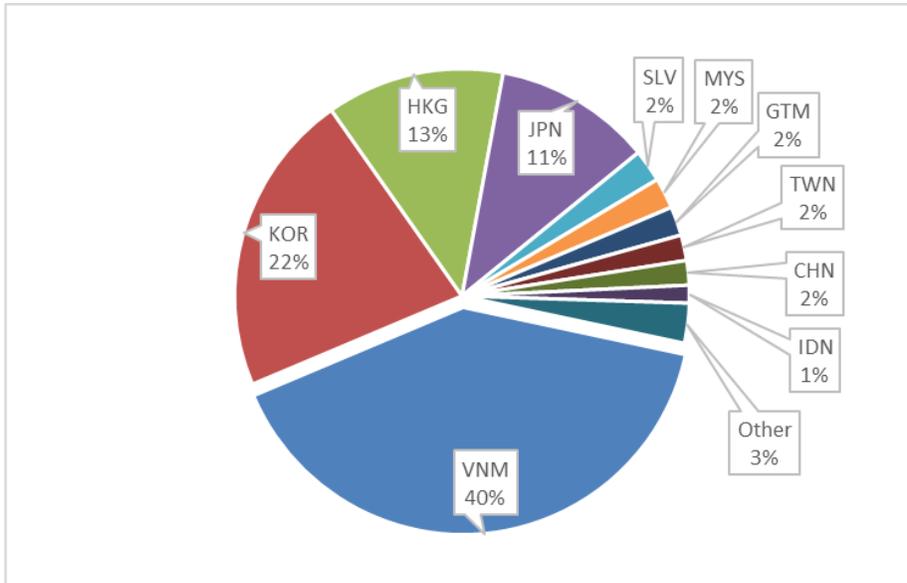
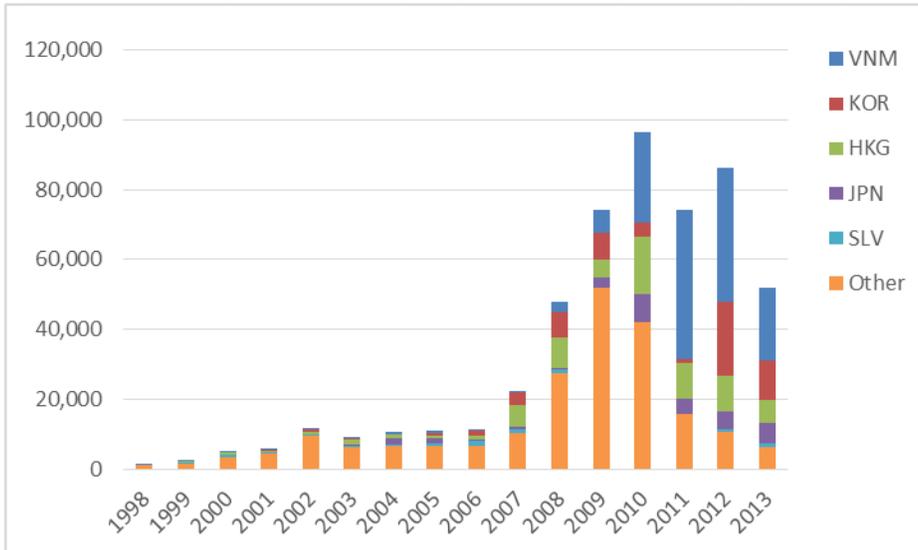


Figure 10a: Tires/Rubber Scrap Exports Trend from California by Country (Tons)



Used Oil and Grease (Figures 11 and 11a)

- The total seaborne weight exported from California was about 870 tons. Compared to 2012, exports of Used Oil and Grease were down 18 percent in 2013.
- Used Oil and Grease made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$586,000.
- Used Oil and Grease made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton is up since 2002, especially in the last three years, with 2013 being \$673/ton.
- The following four countries received 75 percent of the seaborne Used Oil and Grease exports from California:
 - Hong Kong – 210 tons (24 percent)
 - Vietnam – 176 tons (20 percent)
 - Japan – 149 tons (17 percent)

- Guatemala – 123 tons (14 percent)

Figure 11: Used Oil/Grease Exports from California by Country in 2013 (Tons)

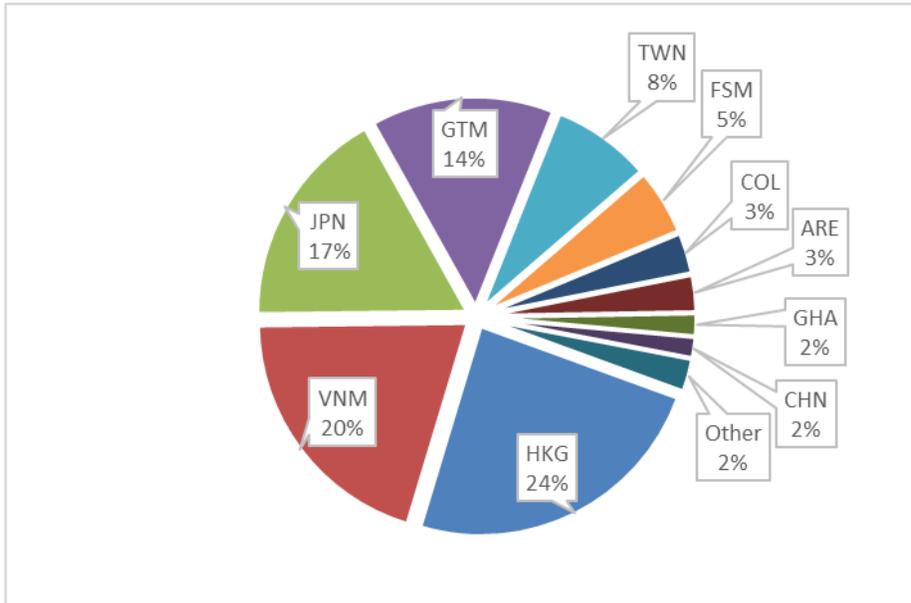
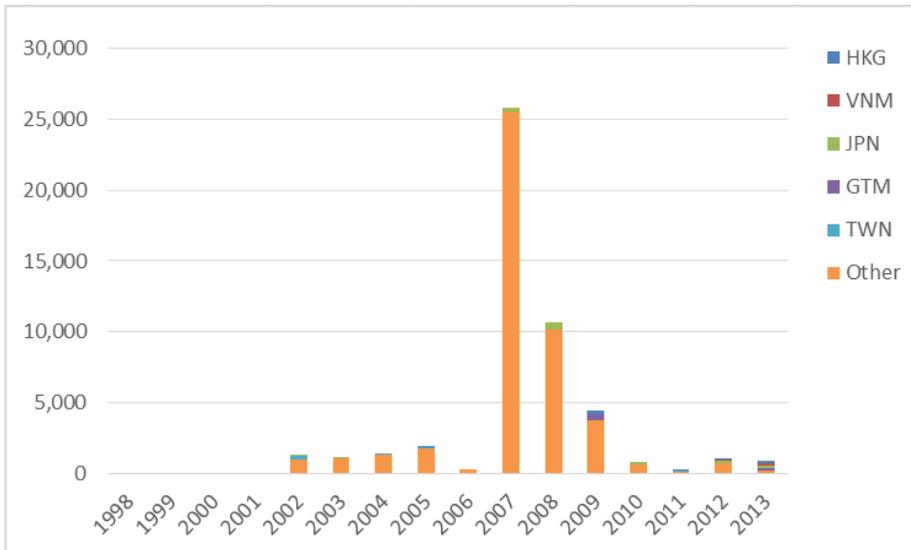


Figure 11a: Used Oil/Grease Exports Trend from California by Country (Tons)



Batteries (Figures 12 and 12a)

- The total seaborne weight exported from California was about 17,000 tons. Compared to 2012, exports of Batteries were up nearly 38 percent in 2013.
- Batteries made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$16.8 million.
- Batteries made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton is up since 1998, especially in the last three years with 2013 being \$997/ton.
- The following three countries received 95 percent of the seaborne Batteries exports from California:
 - Korea – 10,000 tons (62 percent)
 - China – 4,000 tons (26 percent)

- India – 1,000 tons (7 percent)

Figure 12: Batteries Exports from California by Country in 2013 (Weight)

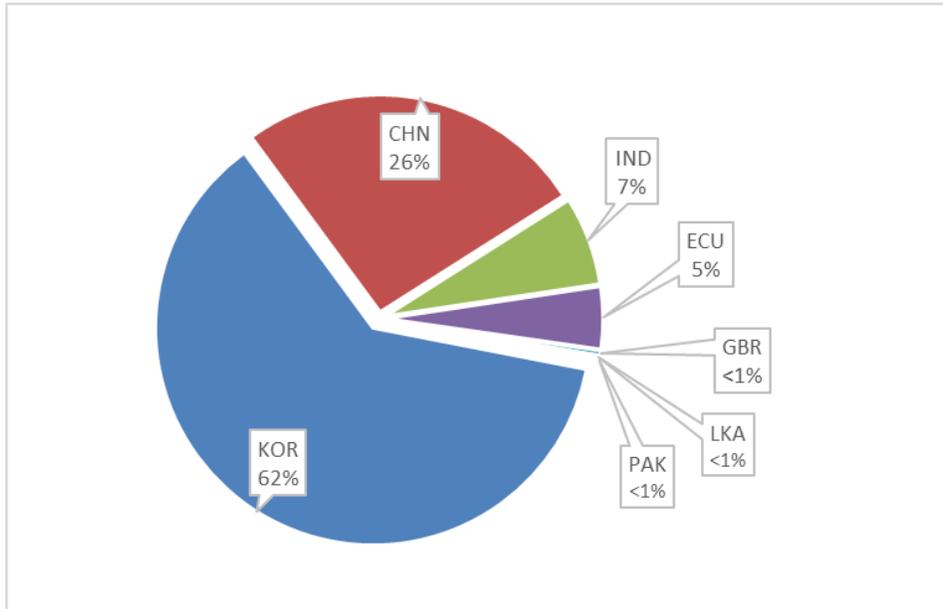
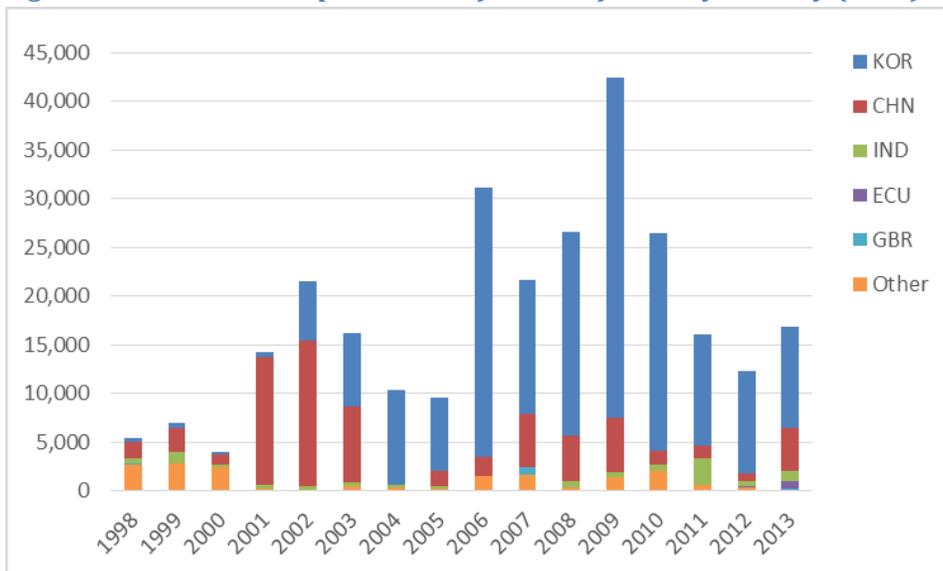


Figure 12a: Batteries Exports Trend from California by Country (Tons)



Copper Wire (Figures 13 and 13a)

- The total seaborne weight exported from California was about 6,000 tons. Compared to 2012, exports of Copper Wire were down 43 percent in 2013.
- Copper Wire made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$37 million.
- Copper Wire made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton is up since 2005, though the 2013 \$5,950/ton price is down from the 2011 high.
- The following three countries received 92 percent of the seaborne Copper Wire from California:
 - China – 4,000 tons (65 percent)

- Korea – 1,400 tons (23 percent)
- Japan – 267 tons (4 percent)

Figure 13: Copper Wire Exports from California by Country in 2013 (Weight)

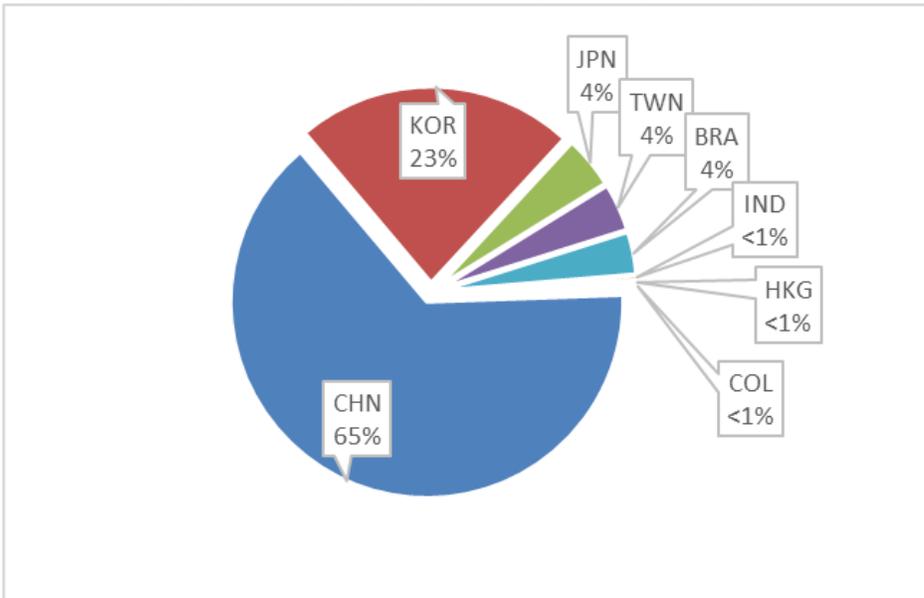
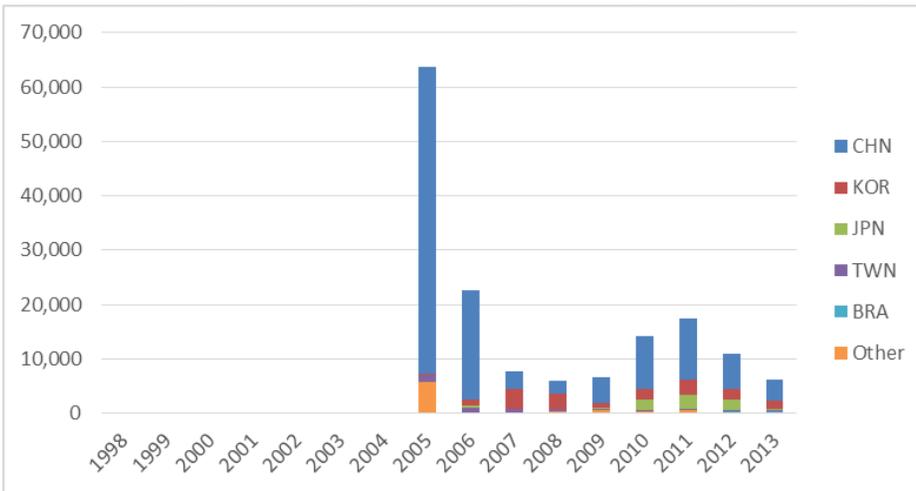


Figure 13a: Copper Wire Exports Trend from California by Country (Tons)



Ferrous Metal (Figures 14 and 14a)

- The total seaborne weight exported from California was about 6.3 million tons. Compared to 2012, exports of Ferrous Metals were down 7 percent in 2013.
- Ferrous Metals made up 34 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$2.5 billion.
- Ferrous Metals made up 34 percent of the value of recyclable seaborne exports.
- The price per ton trend is up since 1998, though the 2013 price of \$404/ton is down over the last couple of years.
- The following three countries received 80 percent of the seaborne Ferrous Metal exports from California:

- Taiwan – 2.4 million tons (38 percent)
- Korea – 1.7 million tons (27 percent)
- China – 920,000 tons (15 percent)

Figure 14: Ferrous Metal Exports from California by Country in 2013 (Weight)

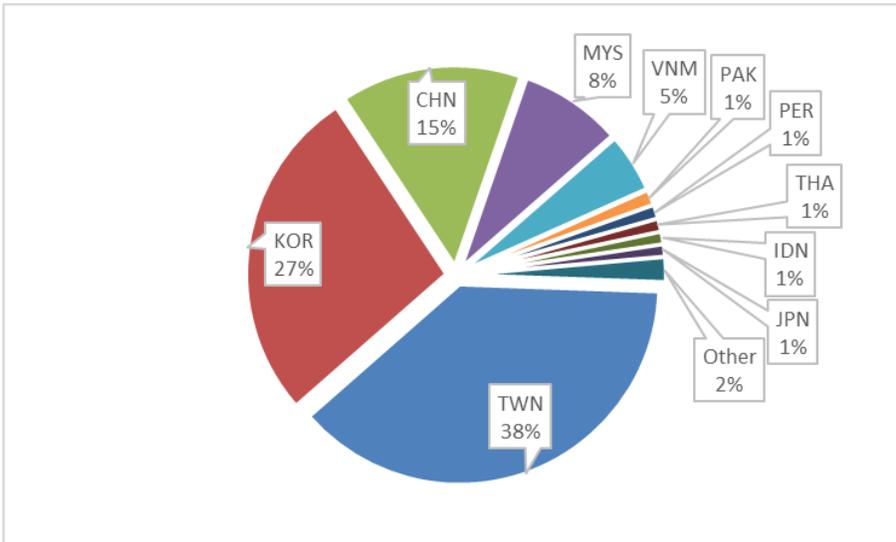
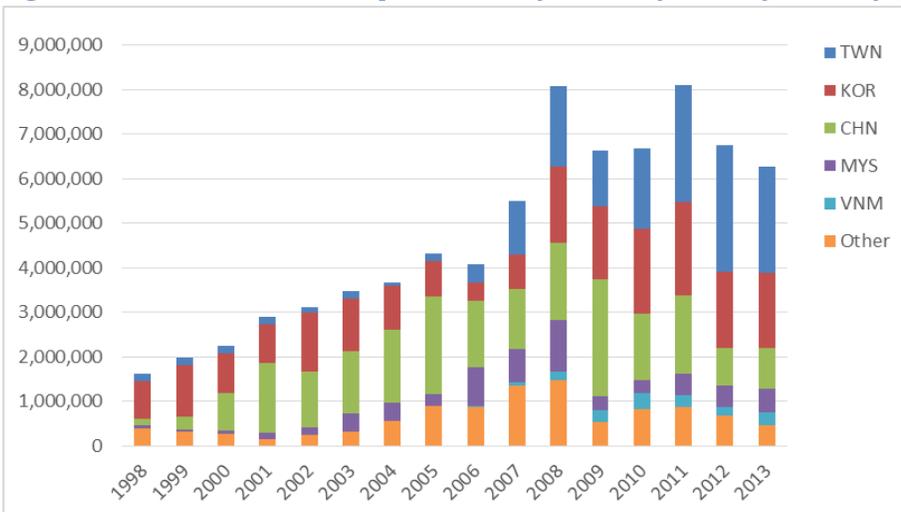


Figure 14a: Ferrous Metal Exports Trend from California by Country (Tons)



Non-Ferrous Metal (Excluding Copper Wire) (Figures 15 and 15a)

- The total seaborne weight exported from California was more than 1.4 million tons. Compared to 2012, exports of Non-Ferrous Metal were down 4 percent in 2013.
- Non-Ferrous Metal made up 8 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$3 billion.
- Non-Ferrous Metal made up 41 percent of the value of recyclable seaborne exports.
- The price per ton is up since 1998, with 2013 showing \$2,138/ton, an increase compared to 2012.
- The following three countries received 90 percent of the seaborne Non-Ferrous Metal exports from California:
 - China – 1.1 million tons (76 percent)
 - Korea – 122,000 tons (9 percent)
 - Taiwan – 73,000 tons (5 percent)
- Non-Ferrous Metals was the third-highest recyclable export category by weight, but was the top category in value due to its relatively high dollar-to-ton ratio.

Figure 15: Non-Ferrous Metal (Excluding Copper Wire) Exports from California by Country in 2013 (weight)

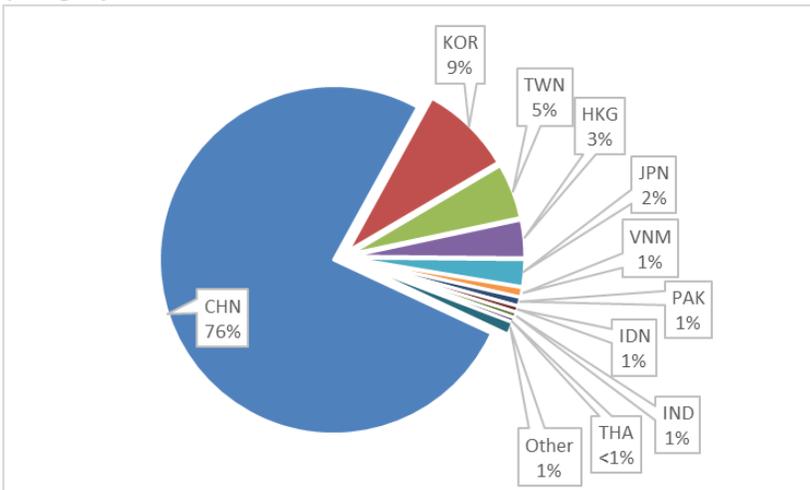
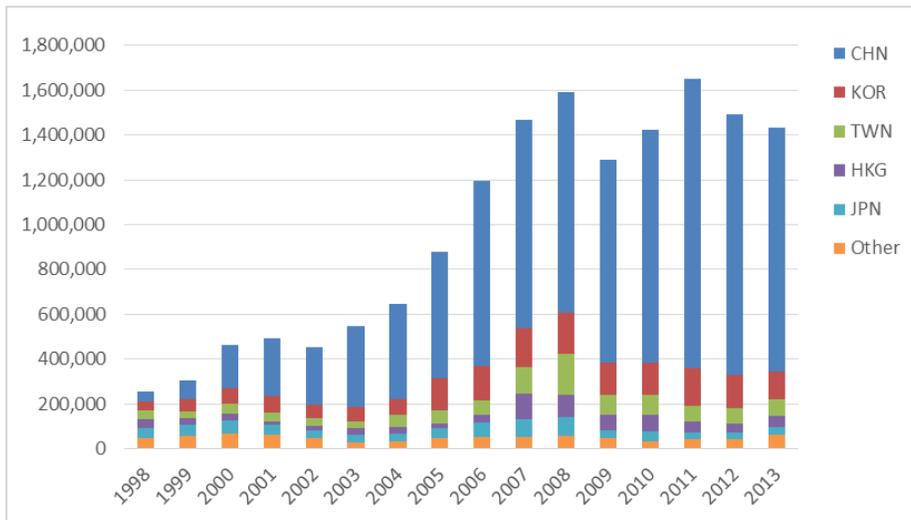


Figure 15a: Non-Ferrous Metal (Excluding Copper Wire) Exports Trend from California by Country (Tons)



Aluminum Cans (Figures 16 and 16a)

- The total seaborne weight exported from California was almost 2,500 tons. Compared to 2012, exports of Aluminum Cans were down 89 percent in 2013.
- Aluminum Cans made up less than 1 percent of recyclable seaborne exports by weight.
- The vessel value of seaborne exports from California was about \$3.7 million.
- Aluminum Cans made up less than 1 percent of the value of recyclable seaborne exports.
- The price per ton has fluctuated since 1998, with the price increasing since 2010 to \$1,456/ton in 2013.
- The following three countries received 100 percent of the seaborne Aluminum Can exports from California:
 - Korea – 2,200 tons (91 percent)
 - China – 193 tons (7 percent)
 - Indonesia –44 tons (2 percent)
- Aluminum Cans are also included as part of the total weight and value of Non-Ferrous Metal.
- Reports indicate that in 2013, Korea increased purchases of scrap aluminum from Japan, which may help explain the sudden drop in aluminum can exports from California ports.⁵

⁵Hur, Jae, and Ichiro Suzuki. "Japan Aluminum Scrap Exports Seen at Record as South Korea Buys." *Bloomberg.com*. Bloomberg, 11 Nov. 2013. Web. 01 Aug. 2014.

Figure 16: Aluminum Cans Exports from California by Country in 2013 (Weight)

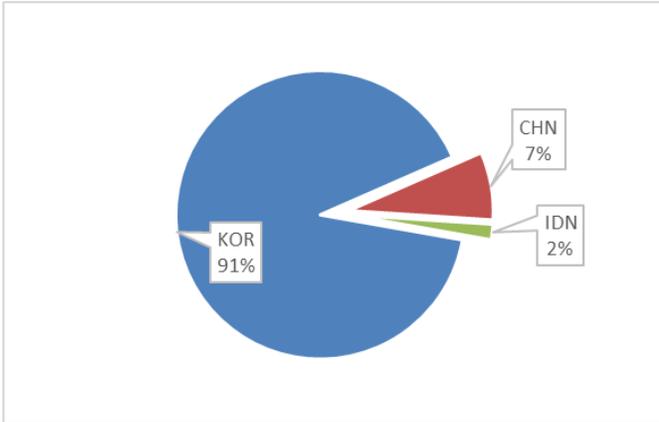
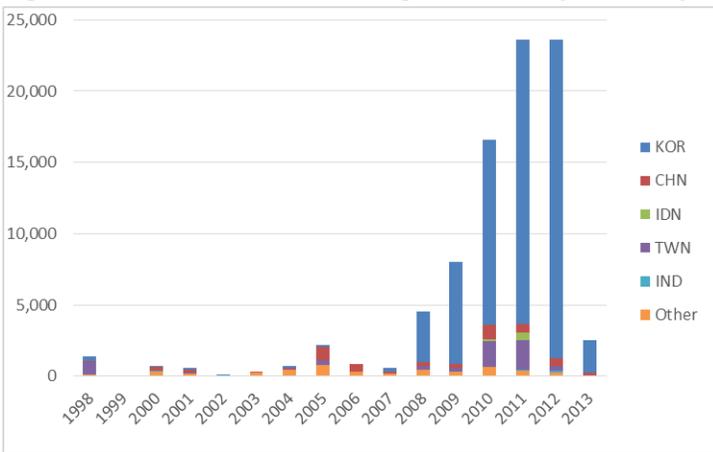


Figure 16a: Aluminum Cans Exports Trend from California by Country (Tons)



2014 First Four Months Comparison (Figures 17, 17a, and 17b)

We can get a glimpse of 2014 by looking at the percent change of seaborne recyclable export tonnages for the top 10 export countries. Figure 17 shows the percent change for the first four months of 2013 compared to the first four months of 2014 year-to-date, as well as the percent change for annual totals from 2012 to 2013. China showed a decrease of about 5 percent from 2012 to 2013 and continues to show an 8 percent decrease so far in 2014.

Figure 17: Percent Change of Recyclable Exports from California Ports by Country

Country	% Chg. Annual Totals 2012 to 2013	% Chg. April 2013 YTD compared to April 2014 YTD
TOTAL ALL COUNTRIES (includes all trade partners)	-6%	-3%
China	-5%	-8%
Taiwan	-14%	-7%
Korea, Republic of	-6%	-.2%
Malaysia	12%	-14%
Hong Kong	1%	-21%
Thailand	-50%	75%
Vietnam	24%	-45%
Indonesia	-15%	10%
India	-41%	33%
Japan	20%	16%

Figure 17a shows the percent change of exports by commodity group from California ports from April 2013 YTD to April 2014 YTD for all partner countries, and separately for China. Year-to-date amounts for the first four months of each year are shown.

Figure 17a: Percent Change of Recyclable Exports from California Ports from April 2013 YTD to April 2014 YTD

Commodity Group	% Chg. April 2013 YTD to		China's rank
	All Partner Countries	China	
High-Grade Paper	-1%	-19%	2
Mixed Paper	-2%	-1%	1
Plastics 1, 2, 4 (PET, HDPE, LDPE)	9%	9%	1
Plastics (PVC, Polystyrene, Other)	4%	4%	1
Ferrous Metals	-4%	-58%	3
Non-Ferrous Metals	-12%	-16%	1

Figure 17a above shows an increase of 4 percent in PVC, Polystyrene, and Other recyclable plastics, and an increase of 9 percent in PET, HDPE, and LDPE recyclables exported to China in the first four months of 2014 compared to the first four months of 2013. China's Operation Green Fence, which began in February 2013, caused an early decline that year. For April 2014 YTD, plastics have increased in overall tonnage when compared to the same time last year.

Operation Green Fence

Operation Green Fence started in February of 2013 by Chinese customs strictly enforcing laws governing the import of recyclables contaminated with waste. This policy caused the rejection of many tons of recyclables being exported to China.

While all recyclables shipped to China were subject to the Green Fence campaign, plastics exports may have been the most affected by the policy change. A closer look at individual recyclable plastic commodity exports to China, shown in Figure 17b, shows the percent change for plastics between the first four months of 2013 compared with the first four months of 2014. Some scrap plastic export tonnages were still negative in April 2014 YTD, yet others have rebounded by percent changes of more than 60 and 90 percent through April 2014.

Figure 17b: Plastic Exports from California Ports to China (Percent Changes)

Types of Recyclable Plastics Exported	% Chg. April 2012 YTD to April 2013 YTD	% Chg. April 2013 YTD to April 2014 YTD
Total of All Plastics Listed Below	-17%	7%
Waste, Paring, Scrap, of Plastic, Polymers, and Ethylene	2%	-16%
Polyethylene Terephthalate (PET) Plastics	-21%	60%
Other Plastics Other Than PET Plastics	-14%	-17%
Waste, Parings, Scrap, of Plastic, Polymers, and Vinyl Chlorine	-50%	96%
Waste, Paring, Scrap, of Plastic, Polymers, and Styrene	2%	23%

Conclusion

The export of recyclables from California was a significant part of the overall exports market in 2013. Seaborne exports of all commodities shipped from California ports was nearly 74 million tons, with a value of more than \$106 billion. Recyclables made up more than 18.5 million of those tons (25 percent) and had a value of more than \$7.5 billion (7 percent).

Most of the recyclable material shipped out still went to China (59 percent), although China received about 4.8 percent less by weight in 2013 compared to 2012. Early indications from 2014 data suggest that China may receive less material in 2014 since the first four months of 2014 show a decline in almost all recyclable exports to China. We will continue to monitor 2014 totals to observe how exports change over the year.

Operation Green Fence had an effect on 2013 recyclable exports to China. Chinese customs officials began the operation in February 2013 with more scrutinized inspections of all recyclables to reduce the amount of contaminated loads. The Plastics market was greatly affected by this change in policy. Mixed and low-grade plastics have not recovered even in the first four months of 2014; however, PET and PVC Plastics have shown a large percentage increase through April 2014.

In 2013, China continued to be the top market for recyclable Mixed Paper, Plastics, Copper Wire, and Non-Ferrous Metal. The top export market for glass in 2013 was India. Hong Kong and Japan overtook Singapore and China as the top markets of Used Oil and Grease in 2013. Korea was the top export country for High-Grade Paper, Batteries, and Aluminum Cans. Vietnam became the top market for export of Tires and Rubber Scrap in 2013.

For most materials, there is not enough capacity at facilities within California to handle the materials that are currently being exported. This makes California vulnerable to changes in these export markets. If one or more were to collapse, it is likely that more materials would end up being landfilled in California, which could impact our ability to reach 75 percent recycling by 2020. On the other hand, if we increase our recyclable content manufacturing capacity, then more of these materials could be processed into new products here in California. It would mean more green jobs created in California and less greenhouse gases associated with long-distance transport, and it would ensure that these resources stay in California's material stream and economy.

While the data in this report gives a good look at seaborne exports of recyclables, there are still key unanswered questions yet to be addressed. We are exploring the different ways to account for how much of the exports truly originated in California as opposed to being collected, consolidated, and then shipped from other states for transit through California ports. Some estimates say 60 percent to 80 percent may originate in California, but that is a rough estimate and a large range. We are also examining ways to include data on shipments of recyclables by rail and truck to destinations such as Canada and Mexico. As future data comes available, we will look to enhance future reports. And probably the most daunting task is to figure out how we can reliably determine the end use of the recyclables that were exported. We will continue to look for answers to these and other questions regarding California's recyclables as we work to meet or exceed the 75 percent recycling goal established in AB 341 (Chapter 476, Statutes of 2011). Please contact us if you have information that could help.

Appendices

Appendix 1: California Seaborne Tons Exported in 2013 (Categorized by Destination Country and Waste/Scrap Commodity)

	China	Hong Kong	Taiwan	Korea	Malaysia	Vietnam	Thailand	Indonesia	India	Japan	All Others	Total Tons
High-Grade Paper	15,618	755	5,357	23,996	0	2,686	463	3,782	935	0	42,936	96,528
Other Paper	8,205,797	2,133	141,613	711,830	8,799	59,426	112,197	108,722	74,083	23,293	132,606	9,580,499
Plastics 1, 2, 4	316,147	119,394	10,636	1,353	22,154	8,161	2,116	16,267	3,697	132	3,788	503,844
Other Plastics	377,860	171,340	10,248	4,602	12,516	4,182	278	24,270	602	337	2,109	608,342
Glass	36	23	104	14	0	0	0	0	2,662	282	174	3,295
Tires/Rubber	909	6,585	946	11,243	1,138	20,985	58	658	0	5,838	3,688	52,047
Used Oil/Grease	14	210	66	5	0	176	0	0	0	149	251	871
Batteries	4,402	0	0	10,439	0	0	0	0	1,118	0	917	16,876
Copper Wire	3,979	22	243	1,423	0	0	0	0	25	267	219	6,178
Ferrous Metal	920,652	40,324	2,397,450	1,680,031	527,392	296,634	64,813	63,160	21,616	60,187	208,483	6,280,741
Non-Ferrous (excluding copper wire)	1,088,320	50,097	73,335	121,949	1,287	12,542	5,953	7,972	7,347	35,644	26,437	1,430,882
Aluminum Cans (included in Non-Ferrous)	193	0	0	2,292	0	0	0	44	0	0	0	2,529
Total All Selected Materials	10,933,733	390,883	2,639,999	2,566,883	573,285	404,790	185,878	224,831	112,085	126,129	421,608	18,580,104
Total All Exports (Recyclable and Not)	26,196,863	1,656,156	5,308,770	5,707,957	1,177,064	1,486,550	977,777	1,511,945	1,564,546	10,030,995	17,887,230	73,505,853

**Appendix 2: California Seaborne Export Market Share in Tonnage in 2013
(Categorized by Destination Country and Waste/Scrap Commodity)**

	China	Hong Kong	Taiwan	Korea, Republic of	Malaysia	Vietnam	Thailand	Indonesia	India	Japan	All Others	Total
High-Grade Paper	16%	1%	6%	25%	0%	3%	<1%	4%	1%	0%	44%	100%
Other Paper	86%	<1%	1%	7%	<1%	1%	1%	1%	1%	<1%	1%	100%
Plastics 1, 2, 4	63%	24%	2%	<1%	4%	2%	<1%	3%	1%	<1%	1%	99%
Other Plastics	62%	28%	2%	1%	2%	1%	<1%	4%	<1%	<1%	<1%	99%
Glass	1%	1%	3%	<1%	0%	0%	0%	0%	81%	9%	5%	100%
Tires/Rubber	2%	13%	2%	22%	2%	40%	<1%	1%	0%	11%	7%	100%
Used Oil/Grease	2%	24%	8%	1%	0%	20%	0%	0%	0%	17%	29%	100%
Batteries	26%	0%	0%	62%	0%	0%	0%	0%	7%	<1%	5%	100%
Copper Wire	64%	<1%	4%	23%	0%	0%	0%	0%	<1%	4%	4%	99%
Ferrous Metal	15%	1%	38%	27%	8%	5%	1%	1%	<1%	1%	3%	100%
Non-Ferrous (excluding copper wire)	76%	4%	5%	9%	<1%	1%	<1%	1%	1%	2%	2%	99%
Aluminum Cans (included in Non-Ferrous)	8%	0%	0%	91%	0%	0%	0%	2%	0%	0%	0%	100%
Total All Selected Materials	59%	2%	14%	14%	3%	2%	1%	1%	1%	1%	2%	100%
Total All Exports (Recyclable and Not)	36%	2%	7%	8%	2%	2%	1%	2%	2%	14%	24%	100%

**Appendix 3: Dollar Value of California Seaborne Exports in 2013
(Categorized by Destination Country and Waste/Scrap Commodity)**

	China	Hong Kong	Taiwan	Korea, Republic of	Malaysia	Vietnam	Thailand	Indonesia	India	Japan	All Others	Total Dollars
	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)	(\$1000)
High-Grade Paper	\$2,875	\$261	\$936	\$3,967	\$0	\$787	\$59	\$1,093	\$228	\$0	\$9,187	\$19,392
Other Paper	\$1,183,888	\$350	\$25,657	\$118,294	\$1,440	\$11,206	\$15,418	\$18,473	\$8,158	\$5,554	\$31,771	\$1,420,209
Plastics 1, 2, 4	\$110,090	\$40,808	\$2,827	\$2,254	\$4,440	\$1,531	\$552	\$4,770	\$2,039	\$122	\$6,143	\$175,575
Other Plastics	\$134,295	\$58,670	\$3,386	\$3,369	\$3,533	\$1,565	\$132	\$9,586	\$229	\$463	\$1,176	\$216,402
Glass	\$216	\$155	\$7	\$263	\$0	\$0	\$0	\$0	\$387	\$563	\$76	\$1,668
Tires/Rubber	\$725	\$2,494	\$826	\$1,603	\$660	\$6,958	\$12	\$190	\$0	\$1,217	\$3,973	\$18,659
Used Oil/Grease	\$11	\$100	\$77	\$4	\$0	\$140	\$0	\$0	\$0	\$93	\$160	\$586
Batteries	\$1,488	\$0	\$0	\$12,343	\$0	\$0	\$0	\$0	\$1,590	\$12	\$1,390	\$16,823
Copper Wire	\$22,423	\$88	\$1,546	\$9,502	\$0	\$0	\$0	\$0	\$116	\$1,766	\$1,317	\$36,759
Ferrous Metal	\$546,627	\$28,488	\$881,164	\$585,003	\$179,127	\$99,188	\$21,801	\$22,229	\$12,751	\$62,764	\$98,772	\$2,537,915
Non-Ferrous (excluding copper wire)	\$2,350,234	\$98,380	\$93,462	\$238,877	\$1,783	\$8,330	\$14,128	\$12,255	\$12,052	\$161,426	\$68,151	\$3,059,079
Aluminum Cans (included in Non-Ferrous)	\$332	\$0	\$0	\$3,271	\$0	\$0	\$0	\$80	\$0	\$0	\$0	\$3,683
Total All Selected Materials	\$4,352,872	\$229,794	\$1,009,887	\$975,479	\$190,983	\$129,705	\$52,102	\$68,597	\$37,550	\$233,981	\$222,118	\$7,503,067
Total All Exports (Recyclable and Not)	\$26,955,231	\$5,577,535	\$6,655,090	\$10,671,184	\$1,746,045	\$1,904,162	\$2,135,113	\$2,102,744	\$1,224,974	\$14,973,676	\$32,346,389	\$106,292,143

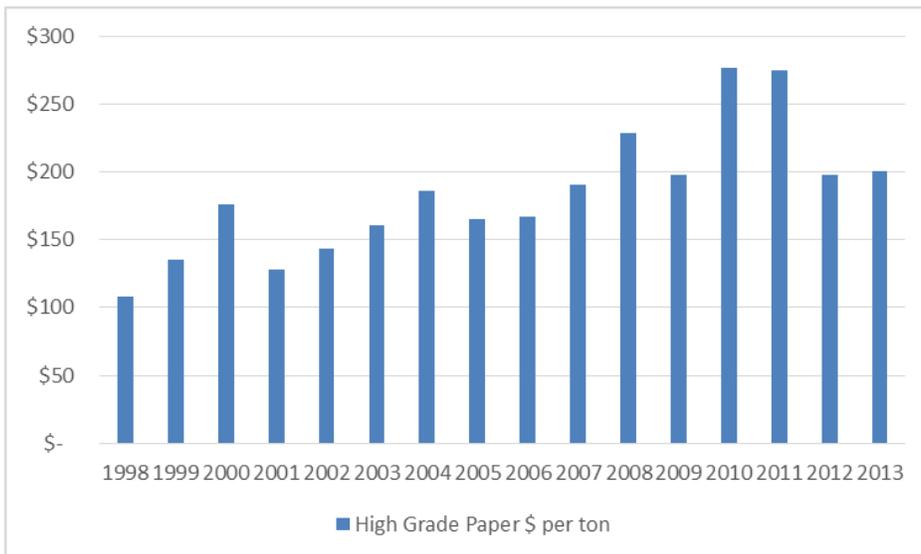
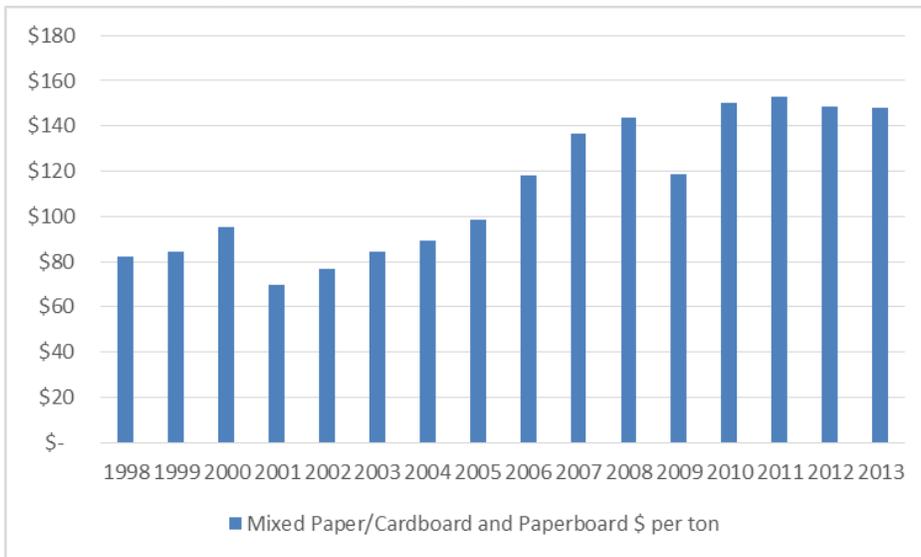
**Appendix 4: California Seaborne Export Market Share of Dollar Value in 2013
(Categorized by Country and Waste/Scrap Commodity)**

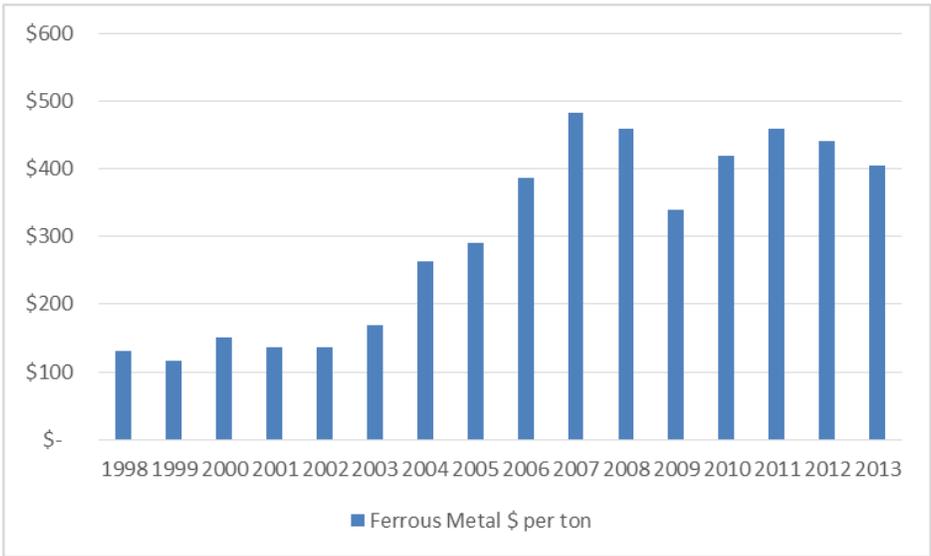
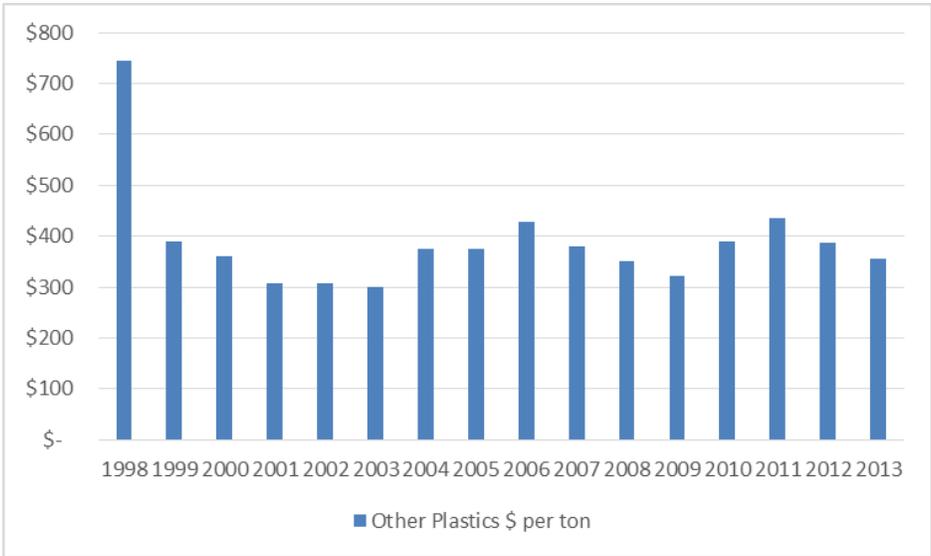
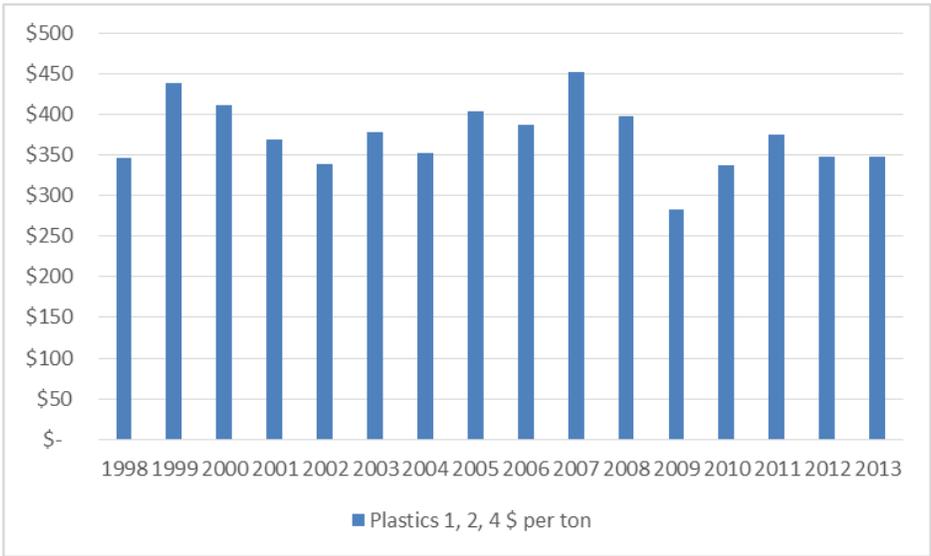
	China	Hong Kong	Taiwan	Korea, Republic of	Malaysia	Vietnam	Thailand	Indonesia	India	Japan	All Others	Total
High-Grade Paper	15%	1%	5%	20%	0%	4%	<1%	6%	1%	0%	47%	100%
Other Paper	83%	<1%	2%	8%	<1%	1%	1%	1%	1%	<1%	2%	99%
Plastics 1, 2, 4	63%	23%	2%	1%	3%	1%	<1%	3%	1%	<1%	3%	100%
Other Plastics	62%	27%	2%	2%	2%	1%	<1%	4%	<1%	<1%	1%	100%
Glass	13%	9%	<1%	16%	0%	0%	0%	0%	23%	34%	5%	100%
Tires/Rubber	4%	13%	4%	9%	4%	37%	<1%	1%	0%	7%	21%	100%
Used Oil/Grease	2%	17%	13%	1%	0%	24%	0%	0%	0%	16%	27%	100%
Batteries	9%	0%	0%	73%	0%	0%	0%	0%	9%	<1%	8%	100%
Copper Wire	61%	<1%	4%	26%	0%	0%	0%	0%	<1%	5%	4%	99%
Ferrous Metal	22%	1%	35%	23%	7%	4%	1%	1%	1%	2%	4%	100%
Non-Ferrous (excluding copper wire)	77%	3%	3%	8%	<1%	<1%	<1%	<1%	<1%	5%	2%	98%
Aluminum Cans (included in Non-Ferrous)	9%	0%	0%	89%	0%	0%	0%	2%	0%	0%	0%	100%
Total All Selected Materials	58%	3%	13%	13%	3%	2%	1%	1%	1%	3%	3%	100%
Total All Exports (Recyclable and Not)	25%	5%	6%	10%	2%	2%	2%	2%	1%	14%	30%	100%

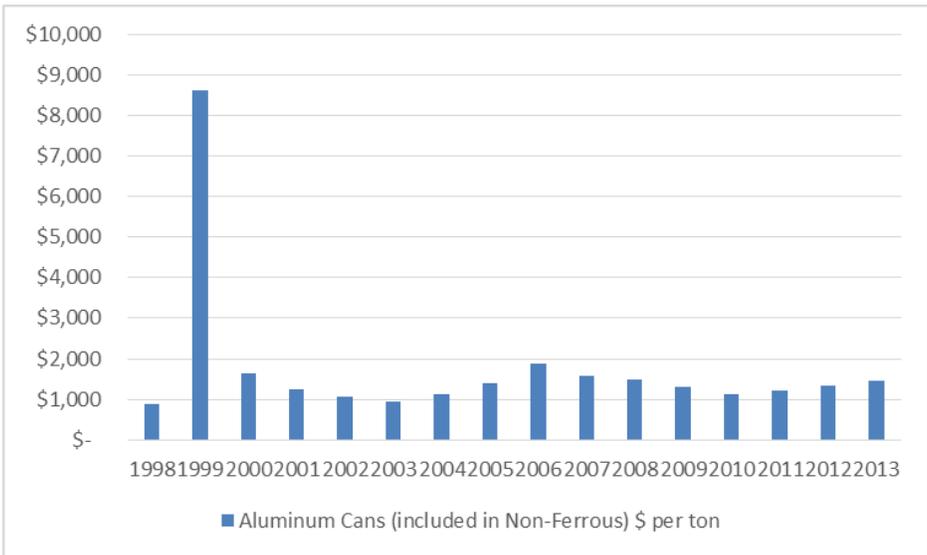
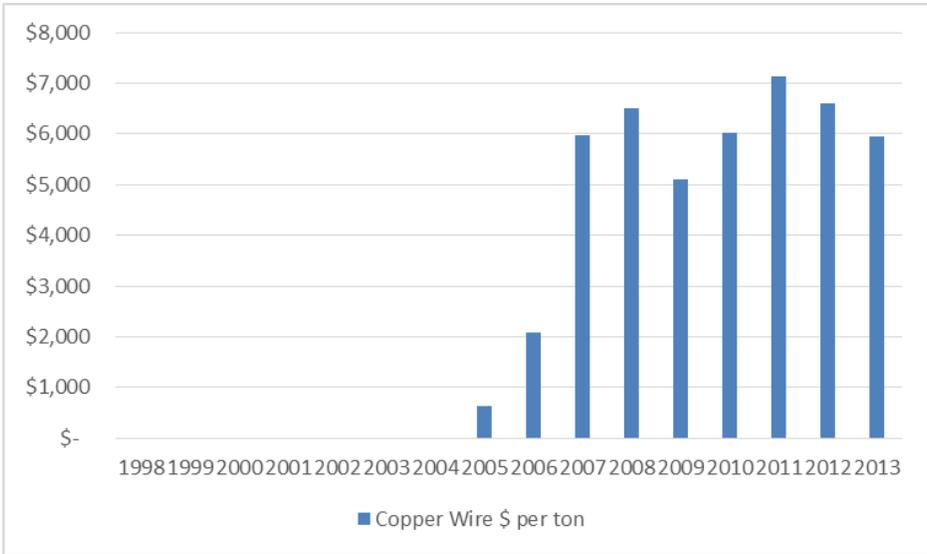
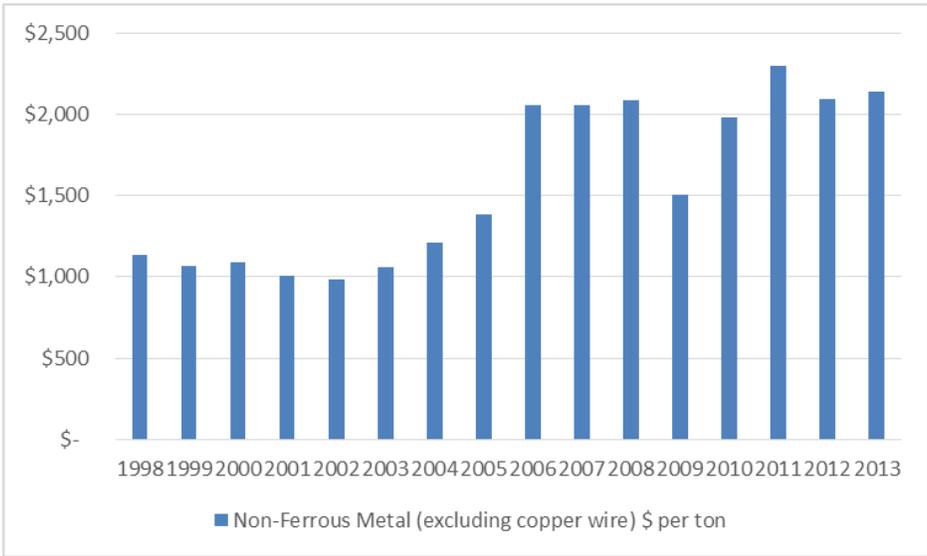
**Appendix 5: Summary of California Port Exports of Recyclables in 2013
(Categorized by Weight, Value, and Market Share)**

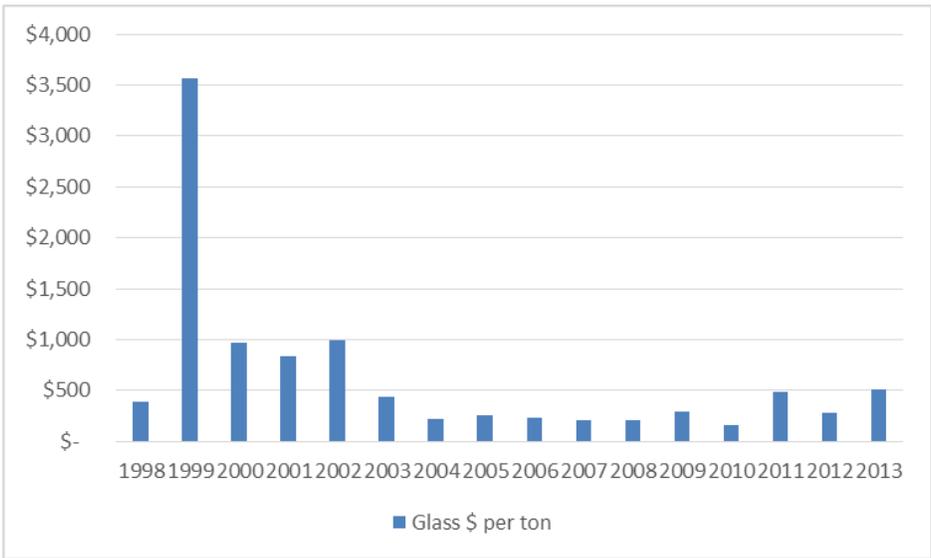
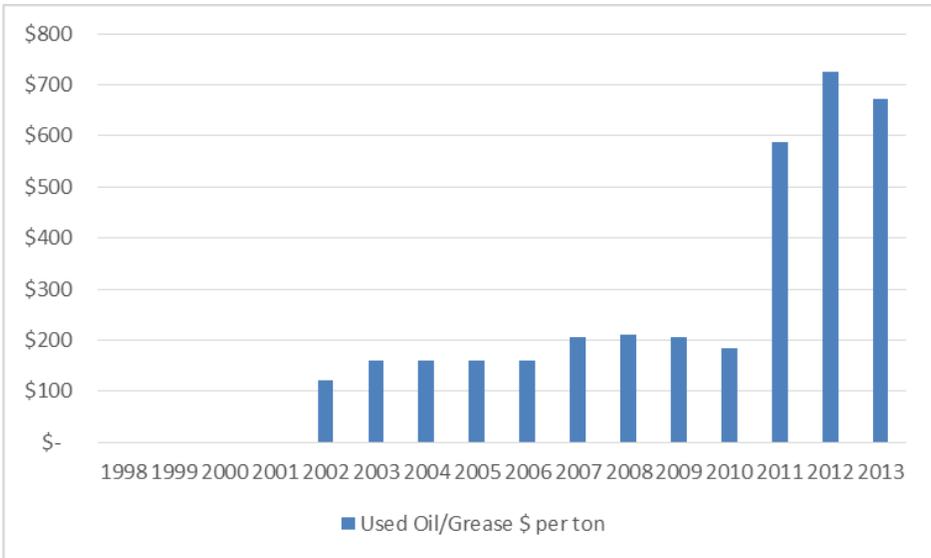
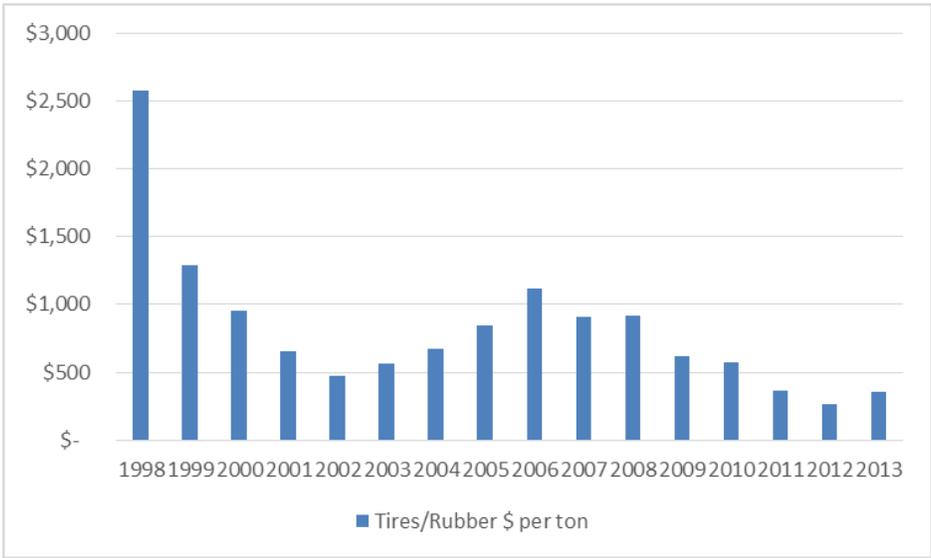
Material	Tons	% All Recycle Exports (tons)	% Annual Exports (tons)	Dollars	% All Recycle Exports	% Annual Exports	\$\$/Tons
Mixed Paper/Cardboard and Paperboard	9,580,499	52%	13%	\$1,420,209,229	19%	1%	\$148
Ferrous Metal	6,280,741	34%	9%	\$2,537,914,659	34%	2%	\$404
Non-Ferrous Metal (excluding copper wire)	1,430,882	8%	2%	\$3,059,078,605	41%	3%	\$2,138
Other Plastics	608,342	3%	1%	\$216,402,447	3%	<1%	\$356
Plastics 1, 2, 4	503,844	3%	1%	\$175,575,051	2%	<1%	\$348
High Grade Paper	96,528	1%	<1%	\$19,392,192	<1%	<1%	\$201
Tires/Rubber	52,047	<1%	<1%	\$18,659,398	<1%	<1%	\$359
Batteries	16,876	<1%	<1%	\$16,822,682	<1%	<1%	\$997
Copper Wire	6,178	<1%	<1%	\$36,759,112	<1%	<1%	\$5,950
Glass	3,295	<1%	<1%	\$1,668,084	<1%	<1%	\$506
Used Oil/Grease	871	<1%	<1%	\$585,771	<1%	<1%	\$673
Aluminum Cans (included in Non-Ferrous)	2529	<1%	<1%	\$3,683,103	<1%	<1%	\$1,456
Total All Selected Materials	18,580,104	100%	25%	\$7,503,067,230	100%	7%	\$404
Total All Exports (Recyclable and Not)	73,505,853	N/A	100%	\$106,292,143,226		100%	\$1,446

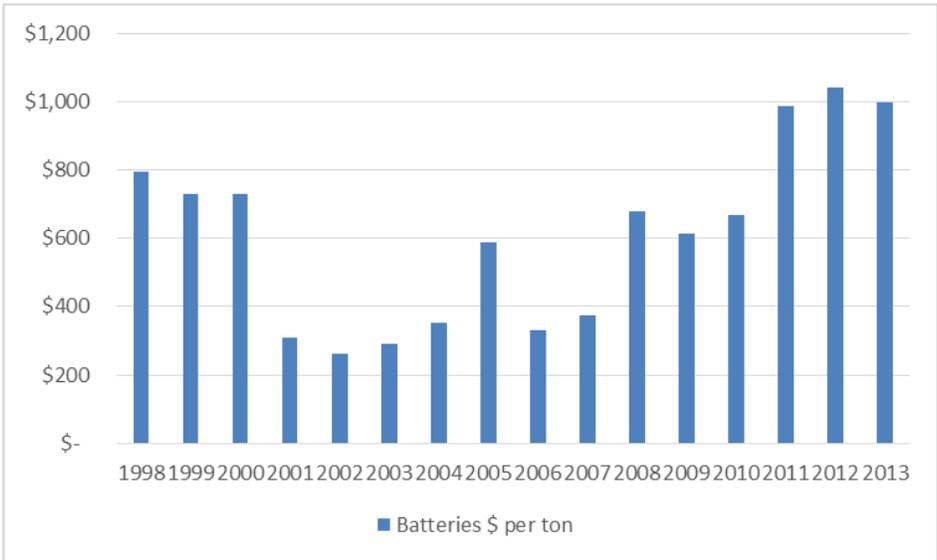
Appendix 6: Price per Ton Over-Time by Commodity Group (Vessel Value/Vessel Weight)











Appendix 7: Country Code Abbreviations (listed by export rank)

1	CHN	China
2	TWN	Taiwan
3	KOR	Korea, Republic of
4	MYS	Malaysia
5	VNM	Vietnam
6	HKG	Hong Kong
7	IDN	Indonesia
8	THA	Thailand
9	JPN	Japan
10	IND	India
11	PAK	Pakistan
12	PER	Peru
13	SLV	El Salvador
14	KWT	Kuwait
15	MEX	Mexico
16	SGP	Singapore
17	PHI	Philippines
18	CHL	Chile
19	SWE	Sweden
20	GBR	United Kingdom
21	COL	Colombia
22	BGD	Bangladesh
23	ARG	Argentina
24	BEL	Belgium
25	ARE	United Arab Emirates
26	GTM	Guatemala
27	TUR	Turkey
28	ECU	Ecuador
29	AUS	Australia
30	WSM	Western Samoa
31	CXR	Christmas Island
32	VEN	Venezuela
33	NLD	Netherlands
34	GRC	Greece
35	SAU	Saudi Arabia
36	EGY	Egypt
37	ESP	Spain
38	ITA	Italy
39	ZAF	Republic of South Africa
40	NZL	New Zealand
41	MAC	Macao
42	CHE	Switzerland
43	DOM	Dominican Republic
44	NIC	Nicaragua
45	DEU	Germany
46	CRI	Costa Rica
47	ISR	Israel
48	BRA	Brazil
49	DMA	Dominica
50	HND	Honduras
51	PAN	Panama
52	CCK	Cocos Islands
53	BOL	Bolivia
54	RUS	Russia
55	LKA	Sri Lanka
56	POL	Poland
57	URY	Uruguay
58	FSM	Federated States of Micronesia
59	COK	Cook Islands
60	TCD	Chad
61	GUY	Guyana
62	AGO	Angola
63	HTI	Haiti
64	SVK	Slovakia
65	IRQ	Iraq
67	GHA	Ghana
68	FRA	France
68	STP	Sao Tome And Principe
69	FJI	Fiji
70	NCL	New Caledonia
71	PLW	Palau
72	EST	Estonia
73	SEN	Senegal
74	NGA	Nigeria
75	MHL	Marshall Islands
76	LBN	Lebanon
77	MNG	Mongolia
78	PYF	French Polynesia
79	SRB	Serbia
80	KAZ	Kazakhstan
81	GEO	Georgia